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# USSR Report

ENERGY

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28 MAY 1986

## USSR REPORT

### ENERGY

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OIL AND GAS

STABILIZED OUTPUT AT GROZNEFT ASSOCIATION

Moscow EKONOMICHESKAYA GAZETA in Russian No 5, Jan 86 p 10

[Article by R. Khachaturov, general manager of the "Grozneft" association: "A Drop in Crude Oil Production Will Not Occur"]

[Text] In the 11th Five-Year Plan the toilers at our association produced one million tons of crude oil and 445 million cubic meters of gas above the plan, which made it possible to realize 48 million rubles above the plan and additionally to obtain in excess of 40 million rubles profit. Continuing to drill ultradeep wells, the oilmen discovered three oilfields and five oil reservoirs. This made it possible to increase oil reserves by millions of tons.

However, we are not deluded with the achievement. The serious neglects in our work are still great. There are those reserves that we are obliged to put into service.

The calculations and plans for the next five-year plan predict a drop in crude oil production from 5 million tons in 1986 to 4.1 million tons in 1990. In discussions of the Basic Directions for Communists project, all the oilmen of the association took on a task -- halt the drop in crude oil production in the 12th Five-Year Plan and fight to stabilize it at a level of about five million tons a year.

What are our main reserves? They are putting large, high-capacity drilling rigs into service; effectively using the new rock-cutting tool; and introducing progressive technology, advanced methods, and automation and mechanization of the production processes. Despite the increasing depth of the wells, we are obliged to increase their installation speed, and then to improve all technical and economic indicators of the drilling operations.

Carrying out this task requires considerably expanding and improving the effectiveness of geological exploration operations to provide the increase in crude oil reserves in the 12th Five-Year Plan. In conjunction with the "Sevkavneftegazpererabotka" association, we will prepare ourselves and in 1989 will begin to exploit the hydrogen sulfide-containing oil deposits in Malgobek, which will be a substantial reserve in raising production.

We also regard the struggle for an increase in the efficiency and quality of all our work, strengthening the organization, labor, and production disciplines, and economic use of resources as very important reserves.

In closing, I would like to make the following request to the Ministry of the Petroleum Industry and the USSR Gosplan. I mentioned that the further development of oil production in the republic is linked with the exploration and discovery of new deposits and reservoirs at great depths, whose product will absolutely include a valuable ingredient, such as hydrogen sulfide. Therefore, even today we are in severe need of equipment and tools making it possible to drill and exploit wells whose product contains up to 25 percent hydrogen sulfide. This will be a great help to stabilize crude oil production in the republic.

12304

CSO: 1822/208

YUGANSK OIL, GAS ASSOCIATION SOCIALIST OBLIGATIONS, 1986

Moscow PRAVDA in Russian 17 Jan 86 pp 1 & 2

[Article under the title: "Using Reserves: Socialist Obligations of the 'Yuganskneftegaz' Production Association Collective, Glavtyumenneftegaz, for 1986"]

[Text] The Yuganskneftegaz production association collective, with deep satisfaction and full approval, adopted the draft of the new wording of the Party Program, Basic Directions of Economic and Social Development of the USSR. Having placed socialist competition on a broad footing for a fitting welcome of the 27th CPSU Congress, the workers of the association fulfilled the plan of the 11th Five-Year Plan ahead of time, having extracted 11.8 million tons of crude oil above the plan. The assignment for growth in labor productivity and fuel and electricity savings was overfulfilled. In 1985, three days were worked on saved resources.

The oilmen of the association, following the tasks stemming from the decree of the CPSU Central Committee as a result of the trip by Central Committee General Secretary M.S. Gorbachev to the Tyumenskaya oblast, decided to work smoothly and at a high output from the very first day of the new year and adopted the following socialist obligations for 1986.

To produce 85,000 tons of oil above the plan in 1986, of which 20,000 tons will be produced prior to the opening day of the party congress, by improving labor organization, maximum use of reserves, wide-spread introduction of the team form of work organization, and strengthening discipline and order in all production teams. Further, to increase labor productivity vis-a-vis the plan by one percent, to reduce industrial production costs by 0.5 percent, and to make 900,000 rubles profit above the plan.

Carrying out the program of scientific and technical reequipment of production, to increase the effectiveness of operating oilfield equipment and using basic production funds. To bring the time between overhauls of wells equipped with submerged electric pumps to 410 hours, having exceeded the industry-wide average by more than 1.2-fold.

To automate not less than 1,400 oil wells and reach a level of oilfield automation of up to 84 percent. To perfect effective chemical agents for primary processing of the oil, to introduce progressive technology for



overhauling wells. To save 13 million rubles through the use of new equipment and advanced technology.

To place 4 new oil deposits into service ahead of time and to produce over 550,000 tons of oil from them. To drill 35,000 meters of oil wells above the assignment. To increase the average production for one drilling brigade by 4.1 percent above the plan.

To create a fund of above-plan savings in the amount of 855,000 rubles and to operate for not less than two days on saved resources based on the cautions and efficient use of all types of fuel and energy material resources.

To improve social conditions of workers, to put into operation 109,000 square meters of living space, 1,615 places of preschools, and a 400 patient polyclinic. To continue implementation of measures to complete the Food Program, to obtain in the enterprise's subsidiary farms 150 tons of meat, 1,360 tons of milk, and 500 tons of vegetables for public nourishment.

The workers of the Yuganskneftegaz production association call for the labor collectives of oilmen of the country to give a broad footing to the socialist competition for the advanced fulfillment of the plans for 1986, and to welcome the 27th CPSU Congress with accelerated work.

The socialist obligations were discussed and adopted in meetings of the association's workers collectives.

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CSO: 1822/208

## OIL AND GAS

### FURTHER EXPLORATION, DRILLING IN CASPIAN SEA

Baku BAKINSKIY RABOCHIY in Russian 29 Jan 86 p 2

[Article by F. Ragimkhanov, manager of the Kaspneftegazgeofizrazvedka trust: "Every Well -- To the Goal." Underlined portions in boldface in original.]

[Text] "To expand exploratory and development drilling for oil in the Caspian Sea" -- this is the task laid down in the draft of the Basic Directions for the Economic and Social Development of the Country for the 12th Five-Year Plan for the Azerbaijan SSR. It directly concerns the collective of the Kaspneftegazgeofizrazvedka trust. We will discuss its activities and plans today.

One can with certainty say that in recent years we are mastering a higher level in our work. This is associated with a new approach to exploration, and we are providing principally different quality and accuracy of predictions. For example, all ten wells that were sunk on the recommendations of our specialists at the long-term deposit imeni 28 April were "right on target" to the oil reservoirs. The mineral prospectors and drillers know full well that such does not happen often. I underline that we expected a 100 percent result, which is the consequence of reorganizing the work of the collective.

Today the trust conducts exploration in all water areas of the Caspian Sea. In the last five-year plan 72,000 linear kilometers of geologic sections were studied and 15 structures with an overall area of 876 square kilometers were prepared for drilling. This is the effectiveness index of the work. In all, 4 oil deposits were discovered and 26 oil reservoir structures were identified by various crews of the trust. But this numerical data means little to the layman. It is important, obviously, to show the change in the nature of the work. True, we must use some numbers, but only for comparison. Previously, the seismic crew could study 1,000 to 1,500 linear kilometers of cross-sections in a year, but recently this index is 18,000 kilometers.

And what are the components of this increase in exploration effectiveness? Primarily the creation of new technical and methodical bases. We now widely use computers, digital storage, and data processing. The high-speed computers available in the trust perform 3.2 million operations a second. It is important that these machines are kept running at full capacity.

In seismic exploration we use the so-called common deep point method. What does this mean? From aboard a ship we extend pulsing equipment that "feels" what is hidden in the depths. According to this, maps are drawn up for the geophysicists. The crucial significance lies in how we altered this method. Previously, four pulses were sent out at the point of a suspected reservoir. Now, this number has been increased sixfold. But this is not the limit; the geophysicists of the trust today are preparing to introduce 48-pulse equipment for profiling. Understandably, the accuracy of the prediction will increase significantly. In addition, owing to the rapid processing of seismic exploration data, we have the capability to map hydrocarbon deposits. We have also been successful in automating the equipment for sea operations. All of this has led to success.

However broad the expanse of water area, we must clearly determine the direction of the exploration in order to concentrate the efforts of the geophysicists. One of the most important is the study of the Apsheron-Pribalkhanskaya crest. There are promising deposits in it: imeni 28 April, imeni Kaverochkin, and "8 Marta". We have already covered the geophysicists' work in the first of these. Our short-term goal is to achieve such a 100 percent level in the exploration of the deposit imeni Kaverochkin. For us, this means the further introduction of a geophysical prediction of a specific geological cross-section and its productivity. In other words, direct exploration for oil is ongoing. Here, the trust had a concept of operations at the deposit imeni 28 April, and we are aware that they--primarily the drillers--are waiting for accurate recommendations from us on the layout of the wells.

The exploration of the Turkmenskiy and Kazakhskiy shelves has been, and remains, sufficiently significant in volume. Zones have been discovered here at accessible drilling depths--four to five kilometers--that are favorable for the accumulation of hydrocarbons. In our routes, we undo that which is "submerged" in the grey history, in paleogeology. Scientists already many times have spoke of the ancient Volga river buried on the bottom of the Caspian Sea. We went 200 kilometers along it, studying the trap which, undoubtedly, is of interest in the search for oil and gas reservoirs.

Recently, the exploration of the shelves of the Northern Caspian has been acquiring ever greater significance. It is very difficult for geophysicists of the trust to work here, since our boats can not travel to the zones interesting to us because of the shoals. Nevertheless, we were able to study 3,000 linear kilometers of cross-sections using seismic exploration. This, of course, was not enough. Then the new, promising method began to be used in the trust. In all, we managed to explore 12,000 square kilometers of the North Caspian shelves with this method.

It should be noted that in various cross-sections, under more careful study, zones were discovered that will become objects of exploration operations in the future. Improving exploration methods made it possible to spare the geophysicists' maps from "blank spots" at specific depths. It has always been considered that some spaces are "dead zones" for the geophysicists. Now

there are none, which is very important for the drillers who must always know whether or not there is any interference to the movement of their tools.

A significantly more intense program lies ahead for the trust's collective to carry out in the next five-year plan. The overall amount of seismic exploration must reach 100,000 linear kilometers and will encompass searching an area of over 1,000 square kilometers. Over 60 percent of the tasks of the trust will be so-called detail work, which will make it possible to prepare 20 structures for drilling. The scale of exploration in the shoals of the North Caspian will sharply increase. A full transition for all exploration to 48- and 96-pulse profiling is planned. It has been mentioned that the trust will obtain a third-generation computer. An important point of the program: each team must go over 1,000 to 1,500 linear meters in the entire Caspian, except for the shoals, where the norm is 200 to 250 meters.

Along with the increase in the scale of operations, it is necessary to talk about the problems that worry us. The most critical is the condition of the vessels. Leasing boats from Krasneftegazflot, we have only one specialized boat at our disposal -- the Vladimir Obruchev. To some degree, the Suleyman Bagirov and Aga Neymatulla satisfy our needs, but very little. We need more specialized boats, and their scarcity for expanding exploration in the shoals is especially appreciable.

The trust needs a production-laboratory building. And this question worries us: we are working for sea oilmen, but our working conditions are not easier. But nevertheless, unfortunately, the relationship to the trust, as to a lateral organization, has been consolidated. It is believed that it will be only just if those privileges in living arrangements and other social measures given to the oilmen were also extended to the geophysicists. We have these concerns, but the collective of the trust lives for one purpose: to increase oil production in the Caspian Sea.

12304

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COAL

NEW UNDERGROUND COAL MINE CONSTRUCTION

Moscow IZVESTIYA in Russian 1 Jan 86 p 2

[Article: "New Underground Construction"]

[Text] The Voroshilovgrad mining construction workers completed work on renovation of the production capacities of the first section of the Krasnokutskiy mine before the deadline. Immediately the brigade of mine workers, headed by I. Khlevnyuk, brought to the surface the first tons of coal from the new stope.

"The volume of the renovation can really be compared only with major construction," N. Lisovenko, IZVESTIYA correspondent telephoned us. "In actuality three powerful shafts have been put into operation, 19 kilometers of basic mine drifts have been tunneled, 300 kilometers of various pipelines, cable networks and other communications lines have been laid and 10 million rubles worth of industrial equipment has been installed.

The growth of the mine's capacities was 300,000 tons of coal per year.

Only recently the Krasnokutskiy was considered to have little promise, its drifts were very remote, the loads from it progressed in "multiple stages" and there were many transport and other technical difficulties. Geologists explored a new coal field where 90 million tons of anthracite were awaiting their time. The mining construction workers rushed to it. They carried out the order of the mine workers with honor. The 16th northern longwall, equipped with the newest KM-88 complete unit, began to yield coal. When the second section of the renovation is completed at Krasnokutskiy, the mine will yield twice as much coal as it does today, that is, 4000 tons per day.

12151

CSO: 1822/229

COAL

COAL LIQUEFACTION PROCESS DESCRIBED

Moscow IZVESTIYA in Russian 3 Jan 86 p 2

[Article by N. Golobkova and V. Okolotin: "Coal Conversion"]

[Text] Powerful enterprises to process inexpensive local coals into gaseous and liquid fuels are to be constructed in Siberia by the end of the century. The easily transportable fuel products made from coal will be of great assistance to the country's rapidly developing power engineering system and a valuable chemical raw material.

Although there are many methods for converting coal into liquid fuel, one of the innovators of this important direction, G. Kruzhilin, corresponding member of the USSR Academy of Sciences, links the metamorphosis with plasmotron technology. The corresponding methodology was developed at the Power Engineering Institute imeni G. M. Krzhizhanovskiy.

A plasmotron is an apparatus in which an arc discharge burns constantly and heats the stream of gas being passed through to a temperature of 10-20,000 degrees. The incandescent gas ignites the coal dust being injected directly in the jet. In this case no inert gases are formed (carbon dioxide, water vapor), and the synthesis-gas obtained (carbon monoxide, hydrogen) appears to be maximally pure. Liquid methanol or gasoline are also obtained from it with the aid of catalysts. It is more advantageous for coal dust gasification to use oxygen rather than air. Production of powerful, reliable oxygen liquifiers, created for the first time by Academician P. Kapitsa has been set up in our country. Gas generators with an oxygen blast can process 500-700 tons of coal per hour, which is equivalent to producing 5 million tons of synthetic liquid fuel a year.

The method of converting coals with the aid of plasma gasification should affect all major coal consumers, by introducing revolutionary changes into all power engineering techniques. In the USSR Energy Program it is a question of processing inexpensive Siberian coals. Now a third of the coal in the country is extracted by the open method and in 20-30 years this proportion will double. How then does one deal with these coals, very moist and with low calorific value? It is inexpedient to transport them for a great distance by rail. Therefore it is

planned to burn some of the coal at electric power stations and to convert some into gaseous and liquid fuel, suitable for transport along pipelines for long distances.

The Power Engineering Institute has worked out the problem of using plasma techniques at coal-pulverizing electric power stations. At powerful thermal electric power stations the boilers are quite complicated to operate because the heated surfaces are subjected to slagging and erosion by ash. Harmful sulfuric oxides and nitrogen, as well as ash residues, are expelled into the air along with the stack gases. With plasma gasification of coals all these problems are essentially simplified. For example, the sulfur passes into hydrogen sulfide and removing it from the gas has already been studied, in particular, at the Orenburg Natural Gas Processing Plant. If the coal is oxidized not by air but by oxygen then the gas volume (and correspondingly the heated surface in the boiler furnaces) is five-fold reduced. Finally, instead of low-grade coal fuel, gas with a higher heat-producing capacity, obtained from the coal, can be burned. Clearly, the savings from all these items compensates for providing the electric power stations with new equipment, right up to replacing the ordinary units with a steam-gas power block, which in addition makes it possible to save fuel.

As for the plasmotron itself, this type of unit for power engineering purposes using direct current has been developed at the Institute of Thermophysics of the Siberian Department of the USSR Academy of Sciences under the direction of M. Zhukov, corresponding member. The work resources are to be increased (now they are 500-1000 hours), and in addition, alternating current is to be used which will greatly simplify the unit.

The method of plasma gasification of coal has obtained broad recognition, and in particular, this direction has been approved by the technical council of the USSR Ministry of Power and Electrification. The Slavyanskiy Hydroelectric Power Station, together with fellow workers of the Donvassenergo Power Engineering Institute, are beginning to use plasmotrons to improve the combustion of coal dust in the furnace of the steam boiler. Analogous work in the combustion of local coals has been begun by specialists at Alma-Ata and in Frunze.

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COAL

DONETSKUGOL SOCIALIST COMMITMENTS FOR 1986

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 16 Jan 86 p 2

[Article: "Socialist Commitments (of the Order of Lenin Donetskugol Production Association for 1986)"]

[Text] The collective of the Donetskugol Production Association has fulfilled the assignment for 1985 and the 11th Five-Year Plan ahead of schedule and has extracted over 104 million tons of coal including 5,100,000 tons above the plan. It overfulfilled the commitment for extraction, for reducing the production cost of the fuel and for an increase in labor productivity.

The miners of the association, unanimously supporting the resolutions of the April and October (1985) plenums of the CPSU Central Committee, developed socialist competition using the motto "For the 27th CPSU Congress--27 Weeks of Shock Work", resolved from the early days of the year to work smoothly and productively and adopted the following socialist commitments for 1986:

Complete the fulfillment of the year's plan ahead of schedule, on 26 December, and take up to the surface 300,000 tons of coal in addition to the plan, including 100,000 tons by the opening of the party congress.

By implementing a program of scientific-technical reequipment and intensification of production, expand the scale of using mining equipment of a higher technical level, convert all the completely mechanized stopes for operation using advanced technological systems and ensure by means of them at least half of the coal extraction. Raise the level of automation of stationary units to 96 percent and of conveyerization of underground transport along sloping drifts to 67 percent. Have in operation 36 stopes and preparatory faces with the extraction and rates of tunneling the drifts 1.5-2-fold above the average for the association.

Through more complete mastery of production capacities, wide-scale use of advanced experience, brigade contracting and cost accounting and reinforcement of labor discipline, raise labor productivity as against the plan by at least one percent and reduce the production cost of coal by 0.5 percent.

The association's work collectives resolved to wage a persistent fight to raise the quality of the coal extracted, to supply fuel to the consumers in accordance with the contractual commitments and to overfulfill the plan for production of



high grade coals for the population. Obtain, through improving the quality and reducing the production cost of the coal extracted, an above-plan profit of two million rubles.

By developing a movement toward economy, the association's workers are pledging themselves to save ten million kilowatt-hours of electric energy, 1,750 tons of conventional fuel and materials worth 160,000 rubles and work out at least three days using the resources saved.

An improvement in the miners' work and everyday living conditions is stipulated: Carry out additional measures to improve the ventilation in the mines, to tunnel for this an additional 11 kilometers of mine workings and put into operation two main ventilators and 12 stationary and mobile refrigerating units. Construct for the miners 12,000 square meters of housing space using the organization's own resources, increase the output of goods for national consumption by two percent as compared with the plan and improve the sanitary conditions in sanatoriums, rest homes, dispensaries and pioneer camps for 45,000 workers and members of their families. Obtain, at subsidiary farms of the enterprises, for public eating facilities 300 tons of meat, 390 tons of milk and 180 tons of vegetables in addition to the funds allotted.

The workers of the Donetskugol Production Association appeal to all workers in the country's coal industry to include themselves actively in the socialist competition for ahead-of-schedule fulfillment of the plans and socialist commitments for 1986 and to meet the 27th party congress with shock work.

The socialist commitments were discussed and adopted at meetings of the workers of the enterprises and organizations of the Donetskugol Production Association.

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## COAL

### ANGREN COAL MINES TO BE RECONSTRUCTED

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 16 Jan 86 p 2

[Article by D. Zazulin, brigade leader of the Uzbekshakhtostroy Trust: "Answer in Full Measure"]

[Text] The collective of our trust entered the concluding year of the last five-year plan with quite a good reserve. The rhythm gathered from its very inception seemingly guaranteed us against failure. But we went off course at the finish line. The main problem was unsolved--the second stage of renovation of the Angren open coal pit, which had promised a 700,000 ton yearly increase in fuel extraction, failed.

There are many reasons for this but there are no justifications. Many of the so-called objective reasons were produced by our own sluggishness and at times even inertia. The communists at the party meeting and the municipal party conference spoke of this extremely sharply and with full adherence to principle. You wonder at the calmness with which the directors of Sredazugol of the Angren open coal pit looked for many years at the fact that the strip pit was more and more lagging behind in extraction and that the renovation, in progress for over eight years, has still not yielded a single ton of increase in coal.

The Uzbekistan Communist Party Central Committee looked into this question and gave a rigorous evaluation of the shortcomings and errors. Let us pose a question, however: why was outside intervention required? Why was the principal position of the primary party organizations not shown promptly? Is it not because the habit of "pointing the finger" is still strong for certain communists? They say, "from the top" it is more obvious, if necessary, "to set us right".

The approach to the matter is completely unacceptable. Under the conditions of the fundamental reorganization of our economic system it is very important to eradicate irresponsibility, wherever and in whatever form it is manifested.

There are no "large" and "small" jobs--it is your business, for which you answer in full measure. Otherwise any trifling difficulty turns into an insurmountable obstacle.

This is already the third five-year plan that our brigade has fulfilled for two five-year plans. Brigade contracting using KTU [coefficient of labor participation] has long been assimilated. Everybody's wages are good with the exception of the crane operators. They receive half as much. The explanation is simple: they are "apart" from the mechanization authority where the wages are time rate plus bonus. Since our brigade works with double labor acceleration, the crane operators make 100 and more hoists per shift instead of 50 to 60. They have twice as much productivity. Logically the crane operators should be included in the brigade--and there's an end to it. So I at first supposed, when raising this question at the party and trade union meetings and before the management of the SU-6 and trust. There was willing agreement with this opinion but nothing more. No one solved this on the whole uncomplicated problem, neither the administration nor the trust nor the service of the republic's Ministry of Construction nor Goskomgrud [State Committee of the USSR Council of Ministers for Labor and Wage Problems]. Given the general striving to brush off "a trifle" it grew into such a problem that it was necessary to appeal to the Uzbekistan Communist Party Central Committee for assistance.

In July of last year the ministry issued a provisional statute on wages for crane operators in our brigade. On the basis of it four months later an analogous order was issued for the trust.. During this time I was more than once invited to tea in the offices of Minister F. Poturemskiy and his deputies, of V. Zakharov, chief of administration of the organization of labor and wages for the ministry, and other responsible comrades. In a word, I had to haunt the thresholds. And the result? They are still paying the crane operators just the way they always did.

Is it a brigade leader's business to run through the offices and be distracted from the construction work? After all there are engineers, economists and directors of various ranks. Everyone is concerned with his duties and concerned with wages but the specific matter scarcely arises--solve it yourself. Zazulin, as an advanced worker, they don't refuse. "So you, Dmitriy Andreyevich, raise a rumpus everywhere about the quality of our output? Tell me--we will give you the most select brick, we won't refuse you that!" This is the reproof I once heard from T. Islamov, director of the Angren Ceramic Combine. But I don't want it only to go to me--brick of only the best quality should go to all the brigades. And what is surprising, you see: every year they put down the ceramicists at the meetings and conferences for poor quality brick--nothing changes. They cite dozens of reasons in justification and lavishly serve out promises to pull themselves together and name masses of "insurmountable" obstacles.

I think that the plans for new wording of the Party Program and CPSU Regulations with the proposed changes oblige stricter demands in such cases and answering in full measure for the matter without reductions and indulgences. A communist will be judged not according to good intentions and endless assurances, but according to specific results--labor and social. Otherwise it will be difficult to overcome the inertia of stagnation and the verbal curtain with which some directors surround themselves.

In the trust they like, when an opportunity offers itself, to flash this indicator: another 11 brigades have become followers of our collective. But is this really so? Only the brigade of Ya. Yantsen have fulfilled two five-year plans along with us and the rest did not cross this boundary point. Rather, turn the conversation here not to victorious reports but to the engineering, organizational and other check-ups, which make it impossible for the rest to repeat the achievements of the leaders. Let us say, when the brigade headed by Yu. Smolin, member of the gorkom, carries out the assembly of equipment which is called "from the wheels", the monthly wages per person here reach 2400-2500 rubles. Months like this, however, you can count on the fingers of your hand. Because of supply disorders there are many downtimes and then this indicator drops to 1700 rubles. Yuriy Safronovich "burns up" the telephones and swears himself hoarse "exhorting" what is necessary. But after all it is the specific executors who upset his schedule so why is there no demand from them?

This situation is familiar to me. You drop into the division of the trust and ask for an explanation of the disruption--they show you mountains of papers. There are comprehensive plans and the perspectives are outlined--it is only that "something must be solved". It appears to me that we should have entered the new five-year plan with the problems already solved, and with the plan for shifting mechanisms according to projects and with the program for technical reequipment.

The strength of party influence on solving practical problems can and must be intensified many times over by increasing the activity of each communist, increasing personal demand and responsibility and the authority of party meetings. It is gratifying to see the growth of a fighting spirit in the party units and to sense the strength of the refreshing stream of criticism and growing exactingness. This is manifested especially clearly now in a period of taking account and of selections and of discussing the precongress party documents. With what will each communist go to the congress and what will be his business and creative performance and social potential? These questions are now the major ones. Answering them honestly, directly and openly means objectively evaluating the contribution of each one raising the prestige of conscientious labor and reinforcing the atmosphere of exactingness and responsibility. In such an atmosphere, persistently created by the party, the shortcomings will be eliminated more quickly, the ballast will fall away from empty logomachy more rapidly and large and small tasks will be specifically resolved. The main thing however is that word and deed find the unity without which fulfillment of the party tasks outlined is unthinkable.

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CSO: 1822/229

## COAL

### EFFICIENT USE OF COAL RESIDUES

Moscow TRUD in Russian 16 Feb 85 p 2

[Article: "Gas or Coal?"]

[Text] The correspondence under this heading, published on 24 December of last year, told of an interesting development carried out at Donetsk: it was proven possible to burn up low-grade coals and even the residues from concentrating mills, which contain up to 30 percent combustible substances, in furnaces with a so-called boiling layer. In this way the possibility of using these residues and coals in energy blocks was revealed.

As the editors were informed by A. Makukhin, first deputy minister of Power and Electrification for the USSR, the Ministry of Power Machine Building was given the technical assignment to develop an experimental-industrial boiler with a steam productivity of 420 tons/hour with a furnace to burn up the fuel in the boiling layer. It is outlined for installation at the Bariaulskiy Heat and Electric Power Station in 1988. In December of last year proposals were directed to the same ministry concerning the creation of a new boiler with a boiling layer for brown and hard coals, as well as for Donetsk anthracite coal fines of a poorer quality.

Wider testing of the technical process for burning fuel in the boiling layer will be conducted by the Ministry of Power and Electrification in 1986-1987 at a number of heat and electric power stations and according to the results of the testing efficient types of furnaces will be selected.

Not only this question, however, was raised in the correspondence--there was a question of the need and possibility of reducing the delivery to the Donbass of liquid and gaseous fuel through better use of local coal resources. Unfortunately, the supplying and planning organizations of the Ukraine and the interested union departments have not so far informed us of their point of view concerning this. The editors await a reply to this question.

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## COAL

### CALL FOR DEVELOPMENT OF KAVAK COAL BASIN

Frunze SOVETSKAYA KIRGIZIYA in Russian 7 Jan 86 p 2

[Article by F. Kashirin, mining engineer-geologist, corresponding member of Kirghiz SSR Academy of Sciences and USSR State Prize laureate: "Plus Kavak Coal"]

[Text] For many years, Kirghizia was the stokehole of Central Asia. Coal production in the republic increased 40-fold during the Soviet era, reaching 4 million tons in 1984. This, of course, is a great achievement. However, it must be admitted that the republic's underground and surface coal mines lag behind many similar enterprises in the country in a number of technico-economic indicators, especially mining production cost and labor productivity.

The fact of the matter is that for a long time the republic's coal industry has practically not grown. For example, over the last 20 years, coal production increased by only 15-20 percent. Production is mainly from coal fields which were first developed before the revolution. In addition, many of them do not have favorable mining-geological conditions. The commercial development of newly explored and prepared coal areas is going very poorly. For example, it has been over 40 years since discovery of the Uzgen Bituminous-Coal Basin and over 30 years since the discovery of the Kavak Brown-Coal Basin, while commercial development of these proven reserves is still in its infancy. Meanwhile, these basins contain the main part of the republic's balance reserves of coals, including high-quality bituminous steam coal (Uzgen Basin) and surface-minable low-ash brown coal (Kavak Basin). A number of the coal fields in these basins have already been explored and are ready for commercial development.

Despite this, the preliminary plan of economic and social development of the Kirghiz SSR for the 12th Five-Year Plan provides that the previous mining administrations will continue to be the foundation of the coal industry, and production will increase by only 9 percent over the 1985 level. This can be achieved by existing enterprises and those under construction if they are modernized and if reserve mining areas and sections are put into production.

The republic's demand for coal already significantly exceeds local production. This demand is partially satisfied by bringing in 2 million tons of coal from Karaganda and the Kuzbas. In the future, especially

beginning in 1990, this demand will increase. This means that the republic's economy can only receive a normal supply of solid fuel if new coal fields are commercially developed.

The Kavak Coal Basin is of special interest in this regard. This basin contains large reserves of surface-minable coal. Some of these reserves have already been prepared for the construction of the Kara-Kiche and Min-Kush Surface Mines. The Kara-Kiche Coal Field is especially valuable; its reserves are sufficient for construction of a large coal pit with high technico-economic indicators. The coal seam here is of simple structure, is very extensive and contains high-quality coal.

The location of the field is also favorable for the construction of a coal pit because there is no need to occupy cropland, pasture, forest or reservoirs. A railroad spur can be built to the coal field.

The question of developing the Kavak Basin is not new: geologists have repeatedly proposed this to the republic's plan and directive bodies over the last 20-25 years.

Now, when our party has set forth tasks of intensification of all sectors of the country's economy, the question of developing the Kavak Basin will become even more urgent. Developing this basin's large reserves will solve a number of important economic problems in the republic. The first is that a reliable fuel-power base would be created for Naryn and Issyk-Kul Oblasts, where the preliminary Basic Directions of Economic and Social Development of the country has specified construction of a tin-mining combine and a gold-mining combine. No less important is the fact that it will provide coal for Northern Kirghizia, which is becoming ever more densely populated and industrially developed, as well as for many regions of Southern Kazakhstan. The development of Kavak will greatly increase surface coal production, which is convenient and advantageous in all respects. And finally, the republic will be able to eliminate imports of coal from Karaganda and the Kuzbas.

In the future, it will be feasible to organize large-scale power generation and production of coal briquettes and activated charcoal close to the Kara-Kiche Coal Pit; i.e., at the mine site. This has been done at similar coal developments in the CSSR and GDR, for example. And, while the future TES will burn coal using power-generating equipment, a coal-chemical facility can also produce a whole range of products.

This is why I propose that the following addition be made to the preliminary Basic Directions of USSR Economic and Social Development for 1986-1990 and the Period Until the Year 2000: after the words "Begin work on the integrated use of water and energy resources of the Sary-Dzhaz River," add "and the proven coal reserves of the Kavak Basin."

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COAL

LONG DELAY IN EQUIPMENT REDESIGN PROVES COSTLY

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 11 Feb 86 p 1

[Article by A. Antonenko, chief of the economics section, SHLYAKH PEREMOGI newspaper: "Rolled Steel to the Scrapyard"]

[Text] Dobropolye, Donetsk Oblast--Donbas miners long ago got accustomed to the fact that they don't produce coal, as it was previously called, but rather "rock mass." If it contains even half coal, then that's not too bad. And, despite the heroic fight against waste heaps, the gigantic tailing dumps are growing, depriving farmers of productive hectares. The problem is, the KM-87 and KM-88 mining machines now being used in the Donbas are designed for thick seams, and fewer and fewer of these seams are left. In thin seams, these machines remove rock along with the coal.

A principally new mining technology is needed: new machines for thin seams. Until such equipment arrives, the "rock mass" will keep on coming. But this isn't the only problem: the support-section bases of the KM-87 and KM-88 systems are narrow and are unsuitable for most mines. The sections tip over in the broken shales, threatening cave-ins. Therefore, the miners "reshoe" the sections before installation: they add homemade expanders to the base bottoms. The miners have nicknamed these "wet treads." Each "wet tread" weighs 400 kg and costs the mine a hundred rubles.

It would seem that there's a simpler way: let the Druzhkovka Machine-Building Plant imeni 50-letiya Sovetskoy Ukrainy, which produces the mining machines, redesign the bases for the geological conditions in the mines. That way, the sections will have only one base, rather than two produced at two different enterprises. Due to the obvious reduction in metal content, the government would come out ahead.

But no: the designers of the Druzhkovka Plant have kept the narrow base, but added intermediate beams between the sections for improved stability. They make these beams out of scarce rolled steel. Each beam weighs 120 kg. When "reshoeing" the machines, the miners simply scrap the beams, since they provide nothing except extra weight.

Now let's look at some statistics. The Dobropolyeugol Production Association replaces 25 mining machines annually in its mines. This means that 3500 sections are lowered into the mines each year, consuming 1.4 million kg of steel plate for "wet treads." The "reshoeing" costs the



mines 350,000 R. In addition, hundreds of tons of rolled steel in the form of useless intermediate beams are scrapped. Two neighboring associations, Krasnoarmeyskugol and Selidovugol, have begun production of the "wet treads" at the same pace. This means that the above figures should be multiplied by three. And, the Ukrainian Ministry of the Coal Industry knows full well how many other Donbas mines have broken shales.

We would like to know something else: why has the UkSSR Ministry of the Coal Industry endured these losses for many years now? And also, who will make good these losses?

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## COAL

### COMBUSTION RESEARCH FOCUSES ON LOWER-GRADE COAL

Alma Ata KAZAKHSTANSKAYA PRAVDA in Russian 19 Feb 86 p 2

[Article by Professor B. Ustimenko, doctor of technical sciences, deputy director of the Kazakh Scientific-Research Institute of the Power Industry, and B. Aliyarov, doctor of technical sciences, chief of the boiler full-scale testing section: "Combustion Model"]

[Text] Development of the Ekibastuz Coal Field's fuel resources and construction of large GRES's based on them are important in solving the tasks of the Energy Program.

The wide use of Ekibastuz coals as power-generating fuel required a sharp increase in production volume and the acquisition of high-production bucket-wheel excavators. However, along with this, production began to include high-ash coal members and interseam burden, which increased the ash content and decreased the coal's heating value.

Boiler equipment of TES's in Kazakhstan which use Ekibastuz coal were designed to burn fuel with an average ash content of 36 percent and a maximum of 41 percent. Later, in connection with the conversion to bulk mining, a new GOST [All-Union State Standard] was approved which permitted increases in average ash content to 48 percent and maximum ash content to 55 percent. This, naturally, led to as much as a 40-percent reduction in the fuel's heating value.

The high ash content of Ekibastuz coal and the abrasiveness of the ash began to cause serious difficulties at electric power plants: the efficiency and reliability of boilers began to drop.

In 1982-1985, the Kazakh Scientific-Research Institute of the Power Industry [KazNIIE] made an integrated comparison of the combustion of normal- and high-ash Ekibastuz coal in a PK-39 boiler in a 300-MW generating unit at the Yermak GRES and in a BKZ-160 boiler at the Pavlodar TETs-2 in order to determine the changes in their technico-economic indicators. It was established that as the ash content increases, boiler capacity drops mainly due to the lack of coal-pulverizing capacity. At the Yermak GRES, these losses were 15-35 percent for various operating conditions. At the Pavlodar TETs-2, the boiler capacity was reduced by 1/4 at 60 percent ash content. Besides the loss of capacity, there is less load-adjustment capability and less generation of electricity when the fuel

quality is poorer, since shutdowns disrupt the continuity of boiler operation.

The conclusion from the above research is unambiguous: the Yermak GRES and Pavlodar TETs-2 experience serious difficulties when burning bulk-mined Ekibastuz coals. The power workers of the Troitsk GRES (the boilers of which already operate on Ekibastuz coals) and of a number of other power plants in Siberia and the Urals also ran into similar problems.

The proportion of low-grade coals in the country's fuel-energy balance will increase in the future. And this means that power workers will face a number of difficult scientific and engineering tasks linked with: 1) operating existing TES boiler units not designed for these purposes and 2) developing new designs. All these factors necessitated the initiation of broad integrated research at existing TES's, as well as development of new boilers with promising technico-economic indicators.

At present, our institute has developed a method for approximate combustion modeling of pulverized-coal furnaces of boilers in high-capacity generating units. This method makes it possible to design individual elements and determine the operating conditions of existing boilers much more quickly. It is essentially the only method of studying the distinguishing features of the combustion process in new designs. With model research, the operating-condition and design parameters can be widely varied.

Based on this method, combustion models of practically all the basic types of boiler units operating in Kazakhstan were developed. A burner test stand with single burners of BKZ-420, PK-39, P-57 and P-57R boilers was developed, as were annular, vortex and fluidized-bed furnaces. Broad research on the combustion process in actual boilers at the Yermak and Troitsk GRES's confirmed the conclusions and recommendations. The method of combustion modeling now is widely used in the country.

The combustion-model research results on the influence of coal ash content were taken into account in the design of the P-57R boiler for the 500-MW generating units of the Ekibastuz GRES-2 and subsequent power plants. These results were also used at the Barnaul Boiler Works in the development of a high-capacity unit for bulk-mined coals. The total economic savings realized in the construction of these boilers and others scheduled for production is over 30 million R.

The results of combustion-model research on optimizing the operating-condition and design parameters of furnaces and burners, including research on reducing harmful gas emissions of TES's, were realized in the boiler units of the Yermak and Alma-Ata GRES's and the Pavlodar TETs.

Equipment replacement in the sector has become a urgent necessity. In order to further the large-scale development of Kazakhstan's power industry and accelerate scientific-technical progress in the industry, the efforts of scientific-research, project and adjustment organizations working in the sector, as well as of boiler manufacturers, must be combined. The

scientific-production association [NPO] could become the progressive form of organization of similar integrated work.

Also, the experimental base and experimental production in scientific-research institutes must be greatly augmented and developed. Only a preliminary verification of experimental new technologies and equipment (in some cases approaching commercial-scale) can make it possible to: 1) prove their feasibility, 2) work out and optimize designs and operating-condition parameters and 3) greatly accelerate industrial implementation. In this light, the long delay in construction and startup of the experimental complex at the KazakhNIIE is unacceptable. Glavalmatastroy, which began this construction project back in 1978, has implemented a little more than half of the capital investments over this time. Obviously, this negatively affects the fulfillment of scientific-research work which is very important to the Kazakhstan economy.

It would be extremely feasible to establish a department for thermal-electric project design in Alma-Ata. This would greatly accelerate project-design work aimed at re-equipping Kazakhstan TES's and TETs's.

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COAL

BRIEFS

LUZANOVSKIY COAL MINE EXTRACTION EXPANDED--Vladivostok--Expanding the extraction areas of the Luzanovskiy open pit coal mine will make it possible to accelerate the development of the power base in the Far East. The second section of the enterprise went into operation yesterday. When the planned capacity is reached two million tons of fuel a year will be sent from here. Consolidating the efforts of the miners and construction workers helped to accelerate the construction of the open pit. Installation and adjustment of the equipment was carried out along with the stripping work. The construction workers laid railroad tracks and motor vehicle roads and power transmission lines. As early as January the Luzanovskiy workers planned to send off to the enterprises of the kray about 100,000 tons of high quality coal.  
[Text] [Moscow SELSKAYA ZHIZN in Russian 8 Jan 86 p 1] 12151

DEEP COAL BED WORKED--Karaganda--Development was begun at the Karaganda Stakhanov Mine of the deepest coal bed in Kazakhstan. The coal came from a depth of 700 meters where the thickest strata of the basin are concealed. It is far from simple to remove them: the high rock pressure and volume of gas in the rock are an impedance. Therefore, at the mine they proceeded to reinforce the sections which began to finish off the strata in two layers with two long walls equipped with complete modern mechanized coal-extracting units. At Stakhanov they are already looking toward the future. A vertical shaft is being broken through to the 900-meter level. Access to the extremely rich mineral resources will immeasurably extend the perspectives of the enterprise.  
[By G. Belotserkovskiy] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 25 Feb 86 p 1] 12151

GIANT EXCAVATOR FOR COAL MINE--Nazarovo (Krasnoyarskiy Kray)--Having completed an eight-kilometer passage, the largest walking excavator in the country, the ESh 100/100, began stripping work at the new section of the Nazarovskiy open pit mine. A complex operation was performed. The gigantic machine, weighing over 10,000 tons, with a 100-meter boom walked along this long distance for the first time. Putting the new area into operation will make it possible for the Navarovskiy collective to bring the extraction of fuel up to 14 million tons a year for electric power stations in Siberia. [Text] [Moscow SELSKAYA ZHIZN in Russian 12 Dec 85 p 1] 12151

ROSTOV COAL MINERS' CONTRIBUTION--Rostov-on-Don--The collectives of the enterprises in the oblast's coal industry, as was outlined by the commitments, fulfilled the year's plan for fuel extraction ahead of schedule. The Rostov miners brought to the surface over 30 million tons of power-generating and coking coals, tens of thousands of tons above the plan. The rank and file of those moving forward is headed by the winners of the competition--the miners of the pit imeni 60-letiya Leninskiy Komsomol, Mayskaya, Yuzhnaya, Izvarinskaya, Sokolovskaya and other enterprises. The celebrated brigades of twice Hero of Socialist Labor M. Chikh and Yu. Maksimov each extracted 900,000-1,200,000 tons of coal in the concluding year of the 11-th Five-Year Plan. [By Yu. Maksimenko] [Text] [Moscow SELSKAYA ZHIZN in Russian 4 Jan 86 p 1] 12151

MAGADAN MINERS INCREASE EFFICIENCY--Magadan--"Before the end of the year workers in the underground beds of the extreme northeast of the country will extract additionally at least 750,000 tons of coal above the plan. This will be the work gift of the northerners to the forthcoming 27th CPSU Congress" said Z. Dyumin, general director of the Severovostokugol Association. Intensification of production based on fundamental renovation of the mines and open pits contributed to the success of the miners of Magadan Oblast. For example, at the Anadyrskaya and Berichgozskaya mines complete mechanized units were introduced. Their launching completed the complete mechanization and automation of the clearing extraction of coal at the enterprises of the Chukotsk autonomous okrug. Complete mechanization and automation of production is now also being implemented at the coal enterprises of Kolyma. All this has made it possible to reduce sharply the proportion of manual labor and to increase the fuel-extraction productivity. Now at the mines of the northern region the monthly extraction of coal per person is 132,500 tons, which exceeds the average sectorial level by more than double. Due to the wide introduction of brigade contracting, the miners of Magadan Oblast reduced the production cost of coal extracted by 2.2 percent as against the plan. [Text] [Moscow SELSKAYA ZHIZN in Russian 13 Oct 85 p 1] 12151

RECENT COAL EXTRACTION ACHIEVEMENTS--(TASS)--The miners of Yakutin achieved an important work victory--in the course of the precongress watch the plan for the year and the 11th Five-Year Plan as a whole was fulfilled ahead of schedule. By extracting 37.7 million tons of coal, they three-fold exceeded the result achieved during the previous five years. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 47, Nov 85 p 3] The collective of the largest open coal pit in the country, Bogatyr' in Ekibastuz brought to the surface a half-million tons of coal. This volume of power-generating raw material was achieved here in 15 years of operating the open pit. [Text] [Moscow EKONOMICHESKAYA GAZETA No47, Nov 85 p 3] 12151

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NUCLEAR POWER

JPRS-UEN-86-012  
28 May 1986

CHERNOBYL AES DIRECTOR ON LABOR DISCIPLINE, VIOLATIONS

Moscow ELEKTRICHESKIYE STANTSII in Russian No 7, Jul 85 pp 2-4

[Article by V.P. Bryukhov, director of the Chernobyl Nuclear Power Plant:  
"On the Work to Increase Labor and Technological Discipline"]

[Text] During the years of revolutionary reforms our country truly traveled a heroic path. The most important result of the self-denying lab or of the Soviet people was the construction of a society of developed socialism.

The constitution of the USSR says that developed socialism is a society of mature socialist public relations, a high level of organization and principle, genuine democracy and freedom. A developed socialist society is a regular step on the path to communism.

Under current conditions, with growing scales of production, increasingly complicated economic relations and rapid scientific-technical progress, there is growing significance in each minute and hour of labor time, in strict observance of regulations and in the creation of stable employees in each sector of production.

As is noted in the decree of the Central Committee of the CPSU, the Council of Ministers of the USSR and the All-Union Central Trade-Union Council "On intensification of the work to strengthen socialist labor discipline", the strengthening in every way of all measures of socialist work discipline is the most important condition for successfully implementing the plans of economic and social development, increasing the effectiveness of the national economy, further strengthening the bases of the socialist way of life, increasing the work-related and political activity of the masses and the perfecting of democracy.

In implementing this decree, as well as the order of the Ministry of Energy of the USSR that has been issued in fulfillment of this decree, the administration, party committee, trade-union committee and Komsomol committee of the Chernobyl Nuclear Power Plant together with the heads of the organizational subdivisions and their social organizations are constantly carrying out the work of improvement of selection, assignment and training of senior engineering-technical personnel and workers. Personnel work is carried out in accordance with long-range (annual) and quarterly plans which are approved by the plant management and coordinated with party, trade-union and Komsomol organizations.

Reports on personnel work are always heard at party and trade-union committee sessions and at party and worker meetings directly in the work collectives of the shops, sections and laboratories of the plant. A detailed analysis of the status of this work in the organizational subdivisions and throughout the plant as a whole is made and taken into account in the monthly assessment of the results of socialist competition. The personnel section prepares a quarterly draft order for the plant on the basis of the results of the personnel work with an informative-analytical supplement.

The order is examined in connection with days of discipline in the subdivisions and also at the ideological sessions of the plant director. During discipline days and ideological planning sessions on topics of discussion concrete decisions are made, which have the force of an order, and their implementation is controlled through the use of a computer. Thus we have continued to significantly increase the excellent level of discipline.

Various measures are being systematically organized and carried out by the workers of the personnel section together with the representatives of the personnel social section, the Komsomol planning staff and other social organizations to increase work and production discipline and to strengthen control of the correct and rational use of work time by all workers, engineering-technical employees and professional employees.

Effectiveness in the discovery of violations, in the taking of measures and broad publicity are bringing positive results—the number of violations of work discipline is constantly decreasing.

In this regard broad use is made of the statutes of the law of the USSR on work collectives, which presents new opportunities for active influence on the work on the part of each worker, encouragement of the leading workers and the struggle against violators of discipline.

The following are some of the organs that have been established over the years at the Chernobyl plant and are successfully carrying out work:

- social section of personnel;
- social legal service;
- council of young experts;
- council of skilled workmen;
- council of instructors;
- social council of discipline;
- commission on the struggle against alcoholism;
- holiday staff;
- council of veterans of WW II, army and labor;
- living quarters council;
- commission on the struggle against smoking;
- volunteer public order squad;
- council of comrades' courts of the plant and comrades courts' in the shops and laboratories;
- commission for the protection of socialist property.



Amateur artistic events of the plant subsections are organized and carried out and great attention is given to the development of physical education and sports.

The administration and party, trade-union and Komsomol organizations always render assistance to all social organizations in the planning and organization of work. For the alleviation and specific definition of the work of a number of social organizations at the plant statutes have been created regarding these organizations, as for example, the statute on the day of discipline, the statute on the employee commission in the party committee, the statute on the commission for the struggle against alcoholism, the statute on the ideological planning session of the director, the statute on the carrying out of systematic checks of the work of the organizational subdivisions, the statute on the council of young experts, the statute on the social section of employees, the statute on the social legal service, etc.

Socialist competition has been developed at the plant between the subdivisions in seven groups and also between the sections and brigades in the shops with monthly assessment of the results. There is competition between duty watches and shifts in the shops, competition between the collectives and individual workers in communist attitude toward work, competition between engineering-technical workers in personal creative plans, competition between the workers for the designation "best in the profession", between skilled workers for the designation "best skilled worker of the Chernobyl Power Plant" and also "best organizer and educator of the collective".

Contests of occupational skill are continually being conducted among the basic production workers.

The personnel section and social organizations are constantly controlling the situation in technical and economic training, the raising of qualifications, the preparation of official certification charts for senior engineering-technical personnel and experts and the presence and preparation of personnel training plans in the shops, sections, laboratories and services of the plant.

Work is done with experts assigned to the reserve for promotion of managerial duties by appointment of the minister, the head of Soyuzatomenergo and the director of the plant. Sixty-nine persons in all area assigned to the reserve.

Those who are assigned to the reserve by appointment of the minister and the head of Soyuzatomenergo are continually increasing their qualifications at VIPK/energy and in the Obninsk branch of the Moscow Engineering and Physics Institute and do practical study on tasks for which they are placed in the reserve. A two-year reserve school at which all experts in the reserve study, has been created and is in operation. Replacement during the absence of senior workers is done basically only in the case of experts assigned to the reserve.

In personnel work we constantly use new forms and methods, such as:

Visits of the managers of the plant and social organizations to assemblies of working collectives in the subdivisions; the presentation of banners and penants to the winners of socialist competition directly at the collectives;

Regular meetings and discussions with secretaries of party and Komsomol organizations and shop-committee trade-union representatives by the deputy director of personnel and social issues and the director of the personnel section.

Individual discussions with skilled workers and senior skilled workers;

Visits to the living quarters by the management of the plant and the organizational subdivisions and their social organizations;

The conducting of competition for the designation "best in the profession";

The carrying out of sporting events and championships between shops and services in football, volleyball, tennis, chess, checkers, sailing etc.; the holding of summer and winter sports festivals, organizing the issuance of GTO standards;

Development of artistic activity;

The congratulating of workers on their birthdays and the honoring of heroes of the day;

Special events for persons who are retiring and the awarding of "veteran of work" medals etc. to them.

As the result of work that has been done, the Chernobyl plant collective is successfully carrying out planned tasks as assumed socialist obligations. The plant collective repeatedly achieved prize-winning positions during the period of 1983-84 in all-Soviet, oblast and city socialist competition with Red Banner awards.

At the plant a stable collective has been established, which is able to carry out the important tasks before it is in fulfillment of the energy program.

However, in spite of the great work that has been done and the measures of disciplinary and social influence that have been implemented against violators of work discipline and social order, in subsections of the plant individual shortcomings still occur in organizational and educational work, as in the incidents of violation of work discipline and social order on the part of some workers.

The administration and social organizations of the plant are taking concrete measures toward reducing and ultimately eradicating violations of work discipline and social order. Toward this end we fully utilize the rights presented by the regulations on discipline for workers of nuclear plants and also the law on work collectives.

Great attention is directed at Chernobyl Nuclear Power Plant to social factors. Among the services established for the inhabitants of the town, including the workers of the plant, are a community center, a pioneer camp for 640 persons, a hospital-dispensary for 200, fourteen preschool child-care centers, four secondary schools, a movie theater, a broad network of commercial and public supply enterprises, a factory for semi-finished products, an everyday-living center, a medical complex with polyclinics for adults and children, an athletic complex and a swimming pool.

In the town, during the years of construction of the plant, over 440 thousand square meters of residential space was constructed. For the use of young persons and young families a large number of common quarters and homes of the hotel type with all modern conveniences have been constructed. In 1984 alone 35 thousand square meters of living space, a kindergarten for 640 children and a hospital-dispensary for 200 persons were placed into use. In 1985 there was construction of 30 thousand square meters of living space, a kindergarten for 320, schools for 1558 participants, a stadium with 500 seats, a surgical unit with 240 beds, dental polyclinics for 670 persons, 1250 square meters of stores, dining rooms with seating for 274, etc.

We attach great significance to the new brigade method of work organization, under which the number of brigades grew in 1984 to 90 and now totals 325. Eighty-seven of them have gone over to the progressive form of work remuneration on the basis of the Coefficient of Work Participation (KTU). By the fiftieth anniversary of the Stakhanovite movement 95 more brigades will go over to the KTU remuneration system.

On the basis of the 1984 work results, 2724 workers were awarded the designation "communist-way worker"; 50 workers were awarded the designation "worker of the eleventh five-year plan"; 10 collectives achieved the honorable designation "collective of communist work".

During 1984, for work successes, 30 workers of the plant were awarded orders and medals of the USSR; 134 workers were given the "veteran of work" medal and 500 persons were given the commemorative medal in honor of the one-thousand five-hundredth anniversary of the city of Kiev.

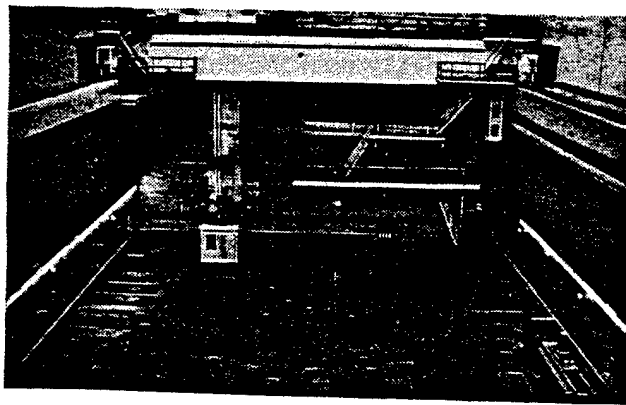
The Chernobyl Nuclear Power Plant Collective assumed socialist duties for 1985 under the motto: "For the year of accomplishment of the eleventh five-year plan--an outstanding Stakhanovite pace!", "For the Twenty-Seventh CPSU Congress--an achievement worthy of it!"

The state production plan to be accomplished by 30 December 1985:

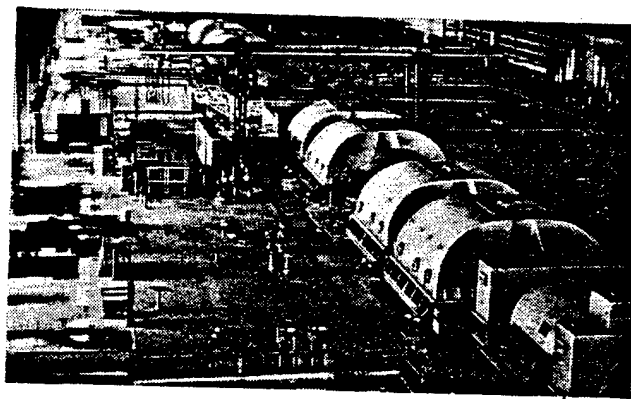
By means of rational process of production, a reduction in expenses for energy resources for our own needs and of wasteful expenses, and a decrease in the net cost of production to achieve two days of fuel savings in the year, which means a savings of 750 thousand rubles, making it possible to produce an additional 192 million kilowatt hours of electrical energy. By the introduction of inventions, rationalization suggestions and the implementation of measures in accordance with NOT [Scientific Organization of Work] to achieve a savings of at least 6.7 million rubles.

All this should also be achieved due to the introduction of proper order to production, improvement of organizational and educational work and the strengthening of work and technological discipline in all organizational subsections.

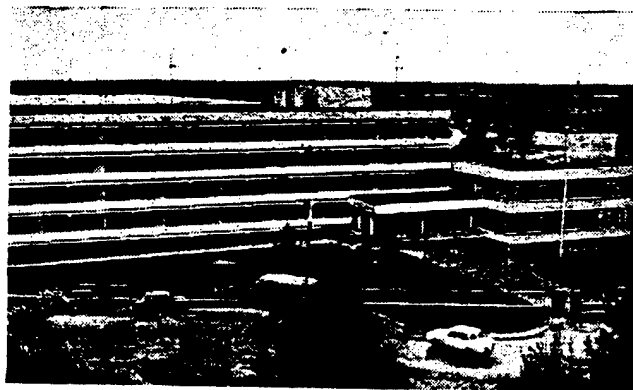
The Chernobyl Nuclear Power Plant Collective proudly fulfills the obligations it has assumed.



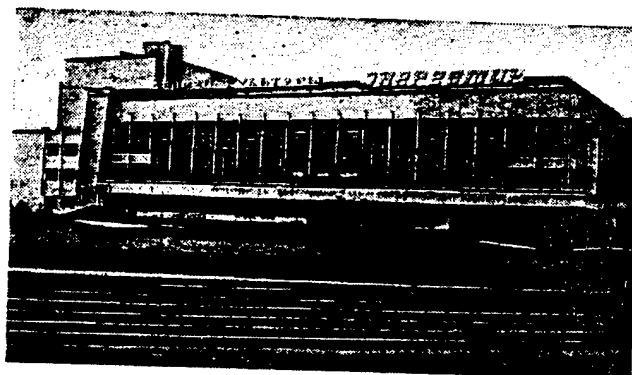
Control room of Chernobyl Nuclear Power Plant



Machine room of Chernobyl Nuclear Power Plant



Hospital-dispensary of Chernobyl Nuclear Power Plant



Energetik Community Center



Monthly ideological planning session of director on matters of discipline

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CSO: 1822/258

NUCLEAR POWER

ANNIVERSARY OF DUBNA NUCLEAR RESEARCH INSTITUTE HAILED

LD270038 Moscow TASS in English 2137 GMT 26 Mar 86

[Text] Moscow March 25 TASS — The Council of Ministers of the USSR has sent a congratulatory message to the Dubna-based (Moscow region) Joint Nuclear Research Institute on the occasion of the 30th anniversary of the foundation of the first international research centre of the socialist countries.

A big group of specialists from socialist countries are fruitfully working at the joint institute on the noble task of using the achievements of modern science for peaceful purposes, states the message.

The results of fundamental studies into the physics of the atomic nucleus and elementary particles, the development of absolutely new directions in the study of the properties of matter have won the institute well-deserved authority and world recognition.

The joint institute has exerted considerable influence on the development of nuclear physics in the Soviet Union and other countries, become an example of the integration of efforts by the socialist states in science, brought up a big group of scientists and specialists, launched new scientific schools and big research collectives.

The institute has fulfilled a great volume of applied work in the field of atomic engineering, material studies, nuclear electronics, medicine and other branches of science and technology, the message says.

/7051

CSO: 1812/105

NUCLEAR POWER

UDC 621.315.1.001.24

SUPERCONDUCTIVITY FOR ENERGY STORAGE SEEN FEASIBLE BY YEAR 2000

Moscow ELEKTRICHESTVO in Russian No 11, Nov 85 (manuscript received 19 Mar 85)  
pp 15-21

[Article by V.A. Zhebit]

[Abstract] This survey article on superconductivity and means of creating advanced energy supply technology states that the next stage in accumulation of energy will allow large-scale energy storage by 2000. At present only pumped-storage hydroelectric power plants can achieve large scale storage. The next stage is the development of various types of batteries and the development of hydrogen-based energy systems. By 2000, superconducting inductive energy accumulators (referred to by the Russian abbreviation SPIN) should be economically expedient. In contrast to pulse accumulators, the SPIN units will be charged and discharged at approximately the same rates. Coils can be created capable of accumulating up to  $10^5$  MW·hr with an efficiency of up to 90 percent or more. Nb-Ti coils can achieve a magnetic flux density of 5-8 Wb/m<sup>2</sup>, while Nb<sub>3</sub>Sn coils can achieve densities of 20 Wb/m<sup>2</sup>. A solenoid with an energy capacity of  $10^3$  MW·hr utilizes the conductors it contains 10 times more effectively than a solenoid with a capacity of 1 MW·hr. The advantages of SPIN devices are noted: little siting problem; near instantaneous mode switching; availability as emergency rapid reserve power. Figures 6; references 15: 2 Russian, 13 Western.

6508/9435  
CSO: 1822/163



## PIPELINE CONSTRUCTION

### OIL-, GAS-, SLURRY-PIPELINE CONSTRUCTION, DEVELOPMENTS, PLANS

Moscow STROITELSTVO TRUBOPROVODOV in Russian No 9, Sep 85 pp 2-5

[Article: "The Potential of Basic Science is in the Service of the Industrial Sector"]

[Text] The April 1985 Plenum of the CPSU Central Committee adopted a new concept for accelerating the social and economic development of the country on the basis of scientific and technical progress (NTP). At the CPSU Central Committee meeting convened on 11-12 June, this concept was further developed and defined. The goal that was set is: to be guided into qualitative and revolutionary changes in production; to shift to the newest technologies and the latest generations of equipment.

For Minneftegazstroy [Ministry of Construction of Petroleum and Gas Industry Enterprises], stirring up activity to accelerate scientific and technical progress is to provide the necessary conditions for fulfilling the program of the 12th Five-Year Plan which is the largest and most complex in the history of the industrial sector.

The front line of the struggle to accelerate scientific and technical progress, says the report of the General Secretary of the CPSU Central Committee, Comrade M. S. Gorbachev, is "The fundamental issue of the economic policy of the Party" running through science. A large role is assigned to utilization of the potential of basic science.

The USSR Academy of sciences has been participating since 1981 in the development of the theory of the reliability of main pipelines. In Minneftegazstroy, the working groups are active in the Council for Coordination of the work which is being done together with institutes of the AN SSSR [USSR Academy of Sciences], AN USSR [UkSSR Academy of Sciences], and SO AN SSSR [Siberian Department of USSR Academy of Sciences] — the particular principal scientific research organizations on the most important problems.

Most fruitful relations for the ministry have been developed with the UkSSR Academy of Sciences. In a resolution adopted by Minneftegazstroy and the Presidium of UkSSR Academy on March 10th 1982, the principal guide lines

for the joint work of the UkSSR Academy institutes and Minneftegazstroy organizations were defined. At a meeting convened in Kiev in June 1985, the board of Minneftegazstroy and the Presidium of the UkSSR Academy of sciences summed up the results of their work for the years of the 11th Five-Year Plan. In an introductory speech, Academician B. Ye. Paton emphasized the important value of the collaboration of the institutes of the UkSSR Academy and the organizations and enterprises of Minneftegazstroy for accelerating the adoption of the results of basic research.

The deputy chairman of the Council for Coordination of the work of the ministry and the UkSSR Academy and chief of the technical administration, Doctor of Technical Sciences, Professor O. M. Ivantsov presented a report on the joint work of Minneftegazstroy and the institutes of the UkSSR Academy.

The speaker noted that, in many respects, the development of the oil and gas industry of the country depends on the level of scientific and technical progress in oil and gas construction.

Together with an unusually high increase in the construction program of the ministry, in the next five-year plan, the technical complexity also is being increased. This requires increases in scientific personnel participation in problems being solved. That participation is relatively low in the industry. In 1,000 persons working, there are, in all, 14 scientific workers and designers. Annually, 25 million rubles are expended on science and about 20 million rubles on the introduction of new equipment.

The development of communications with the Academy institutes increases the scientific potential of the industrial sector and contributes to creation of a basic scientific reserve without which technical progress is impossible.

At present, the work of the sector research and development organizations Minneftegazstroy with the institutes of the UkSSR Academy are being carried out within the framework of fulfilling the assignments of the common scientific and technical program for increasing the quality of construction and the reliability of main pipelines and of fulfilling the resolution of the board of the ministry and the Presidium of the UkSSR Academy of 10 March 1982: "On the development of scientific and technical cooperation between the institutes of the UkSSR Academy of Sciences and organizations of Minneftegazroy". In the realization of the assignments in the resolution, 14 Academy institutes and 11 Minneftegazstroy organizations have taken part. O. M. Ivantsov described the most important results of the completed research.

Over the years of the 11th Five-Year Plan, a number of important results were obtained in the fields of:

- development of the theory of the structural reliability of main pipelines,
- improvement of the quality of pipe steels and development of efficient pipe structures,

- the development of new methods and technical equipment for automatic welding of pipelines,
- protection of pipelines from corrosion and new insulating materials,
- automation of the technological design of pipelines and of the organization of the production in construction operations,
- increasing the wear resistance of the working units of construction machines and mechanisms,
- and of pipeline transport of solid materials and other subjects.

As a result of the research conducted according to an agreement on creative collaboration of the Institute of the Problems of Strength with VNIIST [All Union Scientific Research Institute for the Construction of Main Pipelines], a method was developed for multiparameter comprehensive evaluation of crack resistance and a procedure for proof-testing pipes. For the first time, requirements were successfully formulated for the crucial detection of cracks under the technical conditions at a delivery of pipes. By VNIIST together with the Physical and Mechanical Institute imeni I. M. Karpenko, the electrochemical heterogeneity was determined of welded joints of pipes made from 20YuCh steel which had undergone hydraulic testing at various pressures. The effect was studied of ductile deformations on the corrosion resistance of the welded joints of pipes made of low carbon steel. Recommendations were developed for an optimum welding technology for pipelines transporting oil and gas having a high hydrogen sulphide content. The VNIIST together with YuzhNIIgiprogaz [Southern Scientific Research and State Design Institute for Gas ] and the Institute of Mechanics conducted numerous computer experiments on the longitudinal stability of gas pipelines laid in weak soils, they refined design models of soils, and other things.

The greatest amount of joint research is being done on the welding of pipelines, and pipe-connecting parts. This is explained by the great importance of welding processes in oil and gas construction and by the technical reequipping for welding production in connection with the problems of the industrial sector. O. M. Ivantsov dwelt on the welding of the most critical elements of pipelines; namely, pipe connecting parts. The Ministry has been interested in the continuation of the work of the Institute of Electric Welding on the automatic welding of the connecting parts of pipelines at the Novosineglazovsk combine, including the electron-beam welding of bends, Tee-joints, and reducers. The goal was set of creating a robot complex for welding 720-1420 mm diameter connecting parts with automated monitoring of the welded joints. Minneftegazstroy expects assistance in improving the processes of welding structures including multipoint contact welding of aluminum plates to an aluminum frame for building panels and the creation of a welding section for an automated production line for the manufacture of the metal structures of quickly-raised unitized buildings.

The speaker noted that for the production of pipe parts it is extremely desirable that the Institute of Electric Welding and the Institute of the Physics of Metals of the UkSSR Academy of Sciences find it possible to replace the thermal treatment used for removing stresses from welding and ductile deformations, with treatment by means of vibration and ultrasonics. According to approximate calculations, this would increase the productivity of labor on a given operation by an order of magnitude.

Extremely important for the industrial sector is the introduction of a technology for the cutting of pipelines under pressure by explosion. This method has been successfully assimilated by Glavvostoktruboprovodstroy [Main Administration of Eastern Pipeline Construction]. O. M. Ivantsov said that the ministry has been interested in the development the basically new method for the free thermal bending of pipe being developed by the IES [Institute of Electric Welding] imeni Ye. O. Paton with the participation of Minneftegazstroy. It is also interested in continuing joint work on self-compensating pipes which have successfully passed tests at the Lukomsk GRES in Belorussia.

The VNIIST together with the Institute of Microbiology and Virology imeni D. Kh. Zabolotnyy and VNIIGaz [All-Union Scientific Research Institute for Gas] is studying microbiologic factors in the corrosion of main pipelines. Criteria of aggressiveness according to the intensity of biogenic sulphate reduction have been developed for soils having an intensive development of sulphate-restoring bacteria. Together with the plants for making insulating materials in Novokuybyshevsk and Syzran, a biocide additive has been developed and in 1984, an experimental industrial batch of PVKh [Polyvinylchloride] insulating tape having increased biological and thermal resistance was produced.

Not all collaborative work, however, has been accompanied by success. According to developments of INFOU [expansion unknown], VNIIST, and UkrNIPlastmash [Ukrainian Scientific Research Institute for Plastics Machinery] a technology was proposed for manufacturing, by the method of photochemical lacing, thermosetting polymer tapes for insulating the butts of pipes with a plant insulating coating. In a short period of time more than two years ago, the production of such materials was developed in Novokuybyshevsk. Only recently, however, was the formulation and technology successfully perfected to obtain satisfactory results as a base for insulating tape. Now it is necessary to bring the indices of the gluing layer up to the required level for a thermosetting insulating tape of the needed quality. Vigorous efforts of the UkSSR Academy of Sciences and the ministry are necessary for the solution of this national economic problem in order to begin production in 1985 of thermosetting insulating tape.

The VNIIST and the Institute of Geophysics of the UkSSR Academy, on the basis of theoretical and experimental research using quick-acting measuring systems of great dynamic range, have developed procedures for calculating the parameters of underwater explosive drilling operations and have determined the safe zones for ichthyological fauna and for hydrotechnical structures

during underwater explosions and also the means and methods for protecting ichthyological fauna.

The Kiev branch of VNIIST together with the Institute of Cybernetics imeni V. M. Glushkov of the UkSSR Academy have developed mathematical and program software for calculations of the organization and operational management of the construction of the linear part of main pipelines. The software was introduced at Glavukrнеftegazstroy [Main Administration of Ukrainian Oil and Gas Construction] during the synthesis of the optimum plan for production operations on the gas pipelines Urengoy - Pomary - Uzhgorod and Urengoy - Tsentr.

At present, the Kiev branch of VNIIST together with the Institute of Cybernetics and its SKB [Special Design Bureau] for mathematical machines and systems are developing a dialog system for calculating the optimum organization for construction.

Software has been developed for designing the optimum profile of main gas pipelines.

The speaker noted that in the years 1981-1985 a substantial number of completed developments of the Institutes of the UkSSR Academy, and of joint developments of the Academy and organizations of the ministry, had taken root. First of all, these were the welding equipments: Sever-1, and Styk, the production line PLT-321, the ARP-401 installation for the plasma cutting of pipe and the Kiev-4 installation for air and plasma cutting of metal. Then there are the welding materials: the AN-47 fused flux, the PP-AN-24 flux-cored electrode wire. And there are the ultrasonic monitoring installation, the complex computer program for the optimization of plans for production operations in the construction of main pipelines, and the computer program for calculating the lifetime equipping for a pipeline complex.

In the repair of equipment, restoration of the working part of imported pipelayers by build-up with flux-cored welding wire has been used and also the build-up of the scoops of bulldozers with special electrode tape. For the production of azerit filler, gas melting furnaces (convertors) were installed, for hydraulic pipeline transport a graphic display based on a standard television monitor was developed for the analyzing and computing system Kodivintek, and test specimens of wear resistant gate valves are being made. The overall economic gain from adoption of these developments over the 11th Five-Year Plan exceeds 20 million rubles.

O. M. Ivantsov called attention to the question of the effective introduction of completed research. In his opinion, the broadcast for adoption of completed research results which do not have a specific tie-in to an industrial sector, is of little effect. Immeasurably large yields can be expected from collaborative developments wholly directed to the needs of the industry. Experience has shown that, unfortunately, the UkSSR Academy's Institutes and developers in the majority of cases, do not supply completed research with the necessary technical and economic substantiation. This

delays the adoption of the work. In addition, some organizations and specialists do not reveal proper interest. The ministry hopes that the creation of engineering centers in the Academy will fundamentally improve the adoption of completed research.

In a report, the vice-president of the UkSSR Academy of Sciences, Academician I. K. Pokhodin analyzed in detail the results of the work of the institutes of the Ukrainian Academy over the 11th Five-Year Plan. Special attention was given to questions of the adoption of the developments of the scientists of the Academy and industry. The insufficient volume in the adoption of the Sever contact welding complexes was pointed out in particular. In the opinion of Academician Pokhodin, one of the reasons for the relatively slow adoption of developments is untimely formulation of the financing operations and also insufficient debugging activity by the academic organizations and the industry institutes. The speaker proposed to supplement the preparatory plan for work in the 12th Five-Year Plan with a plan for the introduction of the completed research of the UkSSR Academy of Sciences. He expressed confidence that fuller utilization of the potential of the basic science of the Ukrainian Academy will contribute to accelerating scientific and technical progress in oil and gas construction and increase its effectiveness.

In a joint meeting of the board of Minneftegazstroy and the Presidium of the Academy a wide discussion of the reports presented took place.

In his presentation, the director of VNIIPgidrotruboprovod [All-Union Scientific Research and Planning Institute for Hydraulic Pipelines], Candidate of Technical Sciences Ye. P. Olofinskiy told about work with the Institutes of the UkSSR Academy on hydraulic pipeline transport. In the years 1983-1985 a specific program of work was defined for the introduction of the hydraulic pipeline transport of coal and ore concentrates. Envisaged is the creation of the first industrial pipelines in the country for the transport of solid materials; namely, a coal pipeline from Belovo to Novosibirsk with a length of 260 km, and an ore concentrate pipeline from the Stoylenskiy GOK [Mining and Enrichment Combine] to the Novolipetsk Metallurgical Combine with a length of 230 km. It is planned to construct these pipelines in the 12th Five-Year Plan.

Investigations for determining the hydrodynamic parameters of pulp pipelines carried out with the Institute of Hydromechanics of the UkSSR Academy began in 1977. At installations of the institute the first experimental data on the hydraulic conditions of the flow of pulps has been obtained. At present in the city of Ramenskoye the experimental base of VNIIPgidrotruboprovod for hydraulic transport has been built. The development of methods of calculating, and the generalization of experimental results are being carried out together with the Institute of Hydromechanics of the Academy. As the next stage, it has been planned to develop normative documents for selecting the optimum parameters of industrial pulp pipelines.

For the past three years VNIIPgidrotruboprovod with IES imeni Ye. O. Paton has been developing the materials and technology for plasmajet and powdered

metal hard-facing of the parts for a stop-valve for pipeline hydraulic transport. An installation for plasmajet hard-facing developed and manufactured by the Paton institute already has been put in operation at the proving ground in Ramenskoye, and experimental specimens of wear-resistant gate valves have been tested.

The construction of the coal pipeline from Belovo to Novosibirsk and the following large coal pipelines transporting a highly concentrated water suspension of coal for direct combustion, requires the use of special additives which lower the viscosity of the suspension. This problem together with BNIIPIgidrotruboprovod and organizations of Minkhimprom [Ministry of the Chemical Industry] is being studied by the Institute of Colloidal Chemistry and the Chemistry of Water imeni A. V. Dumanskiy of the UkSSR Academy of Sciences.

Since 1985 according to a proposal of the President of the UkSSR Academy of Sciences, Academician B. Ye. Paton, the technical possibility and economic merit is being studied for the creation of a pipeline for transporting coal-and-gas fuel. Naturally, the realization of this new direction in technology is connected with preliminary investigations. A decision has been adopted for creating an experimental installation for obtaining under test conditions a flow of gas mixed with pulverized coal particles. In a circular pipe installation the necessary gas dynamics of such a flow carrying aggregates will be determined, questions of the safety of operation will be worked out, and also the data will be obtained that is necessary for selecting the technological parameters and for evaluating the technical and economic characteristics of industrial installations of large productivity and length.

A program has been developed for scientific research and development work on the building of the indicated installation and for the conduct in it of the necessary experiments. Envisaged by the program is the participation with VNIIPIdrtruboprovod, of organizations of Minugleprom [Ministry of the Coal Industry], Minkhimprom [Ministry of the Chemical Industry], Mingazprom [Ministry of the Gas Industry] and practically all of the Institutes of the UkSSR Academy of Sciences.

The presentation of the chairman of the Council on Cooperation with Minneftegazstroy, Corresponding Member of the UkSSR Academy of Sciences, S. I. Kuchuk-Yatsenko, was devoted to the wide-scale introduction of the developments of the academic institutes.

The engineering centers are a promising form for the organization of work from the birth of an idea to the experimental model, and for the quickest adoption in industry. These problem-oriented independent subdivisions are called upon to bring new developments into practical realization. In the opinion of S. I. Kuchuk-Yatsenko, the training of the personnel who will man the six engineering centers of the IES is an important question. Considered in detail in the presentation were the problems of welding pipelines as applied to the exploitation of the Yamburg deposits on which scientists of the UkSSR Academy are actively working.

In the presentation of Academician of the UkSSR Academy of Sciences V. I. Skurikhin, the status was described of the joint work of the Institute of Cybernetics of the UkSSR Academy and the Kiev branch of VNIIST in the field of the automated design of the organization for pipeline construction. A program of investigations in this field is planned for the 12th Five-year Plan.

The minister of the construction enterprises of the oil and gas industry, B. G. Chirskov told about the sector's tasks in the 12th Five-Year Plan. He said that in 1985 about 19,000 km of pipelines and 100 KS and NS [Compressor Stations and Pumping Stations] will be built. Work on the construction of oil and gas field facilities is being completed. The amount of work in 1985 amounts to 6.4 billion rubles. There are five scientific research institutes in the sector and four comprehensive institutes with planning subdivisions. There are four design bureaus. The sector has available its own manufacturing and machine building. Equipment produced by the sector's plants is used in pipeline construction.

The principal task of the industrial sector is construction of oilfield facilities and the construction of pipeline systems for delivering oil and gas to the national economy. B. G. Chirskov noted that for a number of years already our country has occupied first place in the world in the production of oil, but in the past year, it took first place in the production of gas. The principal raw material base is Western Siberia, giving the country about one million tons of oil and one billion cubic meters of gas daily. The industry has fulfilled the assignment stipulated by the decisions of the 26th CPSU Congress for building in the 11th Five-Year Plan 1420 mm diameter super gas-pipelines from the Urengoy deposits. The six-line system, whose cost exceeds the expenditures for construction of the BAM [Baikal-Amur Railroad], was built in 4.5 years.

The amount of work in the 11th Five-Year Plan was increased by a factor of 1.5. Thanks to the vigorous activities of the industry's institutes and the academic organizations, the productivity of labor in the sector rose by 24 percent compared with the planned 18 percent.

B. G. Chirskov noted that in the 12th Five-Year Plan, still larger tasks confront the sector. The amount of construction and installation work will substantially exceed that done in the current plan. The extent of main pipelines, including those of 1420 mm diameter, will increase a great deal. The principal increase in gas will be provided by the Yamburg deposit which is situated 200 km north of the Arctic Circle. The complexity of exploiting the deposit lies in the fact that the ground there consists of 70 percent ice and 30 percent slime so that it is necessary to completely replace it with imported soil.

Large tasks confront the industry also in the exploitation of the Astrakhan, Tengiz, and Karachaganaksk deposits in the Caspian region lowlands, and the gas deposits of Turkmeniya.



Thus, the construction of facilities has been substantially dispersed to territories of the country that create additional difficulties. Fulfillment of the 12th Five-Year Plan construction program, additionally, requires many workers. Taking into account the known demographic situation, this problem can be solved only by adopting the achievements of scientific and technical progress.

Special attention must be given to the production of pipe. Serious work is being done in the UkSSR Academy of Sciences on the manufacture of domestic large-diameter pipe for gas pipelines.

B. G. Chirskov called attention to welding problems. Twenty one thousand welders work in the sector. With the increased amount of construction, an additional number of welders of the 5-6th categories will be required. Taking account of the scarcity of labor, the problem can be solved only by realizing the program for the full automation of welding work which the ministry is implementing with the Paton Welding Institute and Minelektrotekhprom [Ministry of the Electrical Equipment Industry].

Another important problem is controlling the quality of welding. These questions have been discussed in the Paton Welding Institute. Today, in a brigade of 32 welders, 12 men are required for monitoring the welding. In the Institute of Cybernetics imeni V.M. Glushkov, the direction of work on the automation of the monitoring of the quality of joints was considered.

The development of new equipment for construction on permafrost is attended by serious problems. A multitude of problems must be solved to provide for year around construction of pipelines in the North. Today in the North, work is done only during 115-120 days; that is, two thirds of the time in a year powerful equipment is not being used. The Academy of Sciences must assist in solving this problem.

B. G. Chirskov noted that the ministry supports the proposals for the introduction of new equipment about which UkSSR Academy of Sciences Academician I. K. Pokhodin and Corresponding Member S. I. Kuchuk-Yatsenko spoke. The method of restoring the parts of machines is of interest for the industry. A serious problem for the construction of northern pipelines is thermal insulation. On this matter there are promising developments in basalt fiber at the Institute of the Problems of Material Sciences of the UkSSR Academy. For the insulation of hundreds of kilometers of northern pipelines on pilings, designs are needed using basalt mats.

The industry is feeling the need for qualified personnel, in the training of whom the UkSSR Academy can be of assistance.

Improvements in the industry today and in the future are connected with the UkSSR Academy of Sciences, with the Institute of Electric Welding imeni Ye. O. Paton, the Institute of Cybernetics imeni V. M. Glushkov, the Institute of the Problems of Material Sciences, and others.

B. G. Chirskov thanked Academician B. Ye. Paton and Academician I. K. Pokhodin and, in their persons, all members of the UkSSR Academy of Sciences for the great state work which has been done for the industrial sector and expressed the hope that the tradition of joint collaboration will continue.

Academician B. Ye. Paton came forward with the final word. He thanked minister B. G. Chirskov for the high evaluation of the work of the Academy of Sciences. Satisfaction was expressed that good collaboration, having a long tradition, has been established between Minneftegazstroy and the UkSSR Academy of Sciences. Academician B. Ye. Paton noted that the address of B. G. Chirskov in which the far-reaching problems that the industry must solve were described, had given rise to much interest - had impressed many. The fulfillment of the Energy Program of the country depends on to what extent the work of Minneftegazstroy is successful.

Academician Paton emphasized that with each year, the difficulty of the construction which is carried out by the ministry is increasing. Today the principal thrust is being given to construction of main gas pipelines. In the 12th Five-Year Plan, 1420 mm diameter gas pipelines also will be built only not from Urengoy, but from Yamburg, and they all must go to the center of the country and to the western border. In this connection new difficulties arise. The Academy of Sciences must bring its contribution into this work particularly in the construction of the main sections of high pressure pipelines using the energy of the gas reservoir so as not to erect compressor stations beyond the Arctic Circle where this is extremely expensive and complicated.

Academician Paton said that on the whole, he agreed with the opinion of B. G. Chirskov about the status of affairs with pipes. The country has sufficiently large capacity for the production of pipe, and today, there is the necessary steel. The important initiative of the ministry concerning connecting parts was supported; namely, the decision that the Novosineglazovsk plant which is producing connecting parts had adopted the technology of electron-beam welding.

Academician Paton gave a high evaluation to the efficiency of the block method of construction which is being used in Minneftegazstroy, and said that the institutes of the UkSSR Academy of Sciences can render assistance in the further development of this method. Our country has available today the Sever and Styk welding systems of which there are none in world practice. So it has turned out that all efforts were directed at creating machines for welding 1420 mm diameter pipes. But the ministry needs similar machines for welding pipe of different diameter, beginning with 57 mm. For these diameters, as yet, there is no machine. They must be developed and the sooner the better.

Academician Paton noted the need for intensifying attention on the development of insulating materials for pipelines. He expressed the hope that the UkSSR Academy, along with the interested ministries, will exert every effort toward solving this problem.

The development of methods for monitoring welding is a very important problem. It must be taken into account that a pipe is a high-pressure vessel working under complicated conditions; therefore unfailing quality control of pipes today is very important. B. G. Chirskov correctly posed the problem of the comprehensive development of new methods of monitoring the welding of pipes which must be solved extremely quickly.

Academician Paton stated the reason for the need to construct low-pressure gas distributing pipelines out of plastic pipe. In the U.S.A. an important part of gas pipelines is constructed from plastic pipe, and this is very advantageous because it saves steel, the pipe does not corrode, and it does not require insulation. Minneftegazstroy will construct not only main gas pipelines and oil pipelines, but also the gas pipelines for the gasification of populated areas throughout the whole country. Plastic pipe unquestionably will then be used on a large scale. At the same time, plastic pipe must be used not only at low pressure (0.3-0.5 MPa), but also at medium pressure (1.5-2.0 MPa). Academician Paton supported the proposals at the conference on accelerating the adoption of the achievements of scientific and technical progress. Such adoption should be provided for in conjunction with the ministries. Clear organizational measures are necessary including strengthening the work with the ministry through the engineering centers for widespread introduction of the developments of the UkSSR Academy of Sciences into the industry.

Hydraulic transport and coal-and-gas transport which are being studied by Minneftegazstroy are progressive, new, and extremely urgent undertakings, and the UkSSR Academy of Sciences will collaborate with the ministry on these questions.

The Board of Minneftegazstroy and the Presidium of the UkSSR Academy of Sciences approved the work of the institutes of the Academy and the organizations of the ministry in the 11th Five-Year Plan and confirmed the principal directions of collaborative work in the 12th Five-Year Plan; namely,

- development of automated methods and technical means for controlling the quality of welded connections,
- assuring the reliability and strength of main pipelines and the protection of them from corrosion,
- development of the technology, organization and administration of pipeline construction,
- and the creation of pipeline systems for hydraulic transport.

The plan for the scientific and technical collaboration of the Institutes of the UkSSR Academy of Sciences and the organizations of Minneftegazstroy for 1986-1990 was approved.

The delegation of specialists of Minneftegazstroy acquainted themselves with the achievements of the Ukrainian scientists and designers, and inspected specimens of new equipment at the proving ground KF [expansion unknown] of the SKB [Special Design Bureau] Gazstroy mashin. Meetings and discussions were held in the scientific organizations of the design bureau and the plant shops. The newest equipment, materials, instruments and progressive technological processes were exhibited.

The largest scientific and technical complex, the Institute of Electric Welding imeni Ye. O. Paton of the Ukrainian Academy of Sciences, is well known to the constructors. In this institute, for the first time, a new form of inter-industrial-sector relationship of science with industry has sprung up and received development. These are engineering centers. The delegation of Minneftegazstroy specialists acquainted themselves with the activities of the engineering center for electroslog technology and the center for protective coatings whose developments brought radical changes in a number of branches of industry and construction. In the makeup of the centers, several design and technological departments and shops of the experimental plant are provided which act on the basis of independent relations with clients - with enterprises of different ministries and departments. Such a structure substantially accelerates the cycle "science - development - industry". The equipment, materials, and the electroslog technology for casting which were developed by the scientific departments together with the engineering center have found application in the repair of parts of construction machines at the enterprises of the sector.

At the Institute of Cybernetics the potentials of modern computer equipment were demonstrated.

At the proving ground KF SKB Gazstroy mashin new welding equipment and means for small-scale mechanization were demonstrated; namely, systems for electrocontact welding of pipes with diameters 377-530 mm, and 1020-1220 mm, a four-station welding unit with a rectifier generator, and an installation for arc-contact welding of 57 mm diameter pipe.

The development of the cooperation of Minneftegazstroy organizations and institutes of the UkSSR Academy of Sciences will permit increasing the effectiveness of fundamental research and accelerating the rate of scientific and technical progress in the industry which will contribute to the successful fulfillment of the Energy Program of the country.

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GENERAL

QUALITY OF COAL SUPPLY, NUCLEAR DEVELOPMENTS IN UKRAINE

Kiev ENERGETIKA I ELEKTRIFIKATSIYA in Russian No 1, Jan-Mar 86 pp 2-6

[Article by UkSSR Minister of Power and Electrification V. F. Sklyarov: "Chief Areas for the Intensification of Production in UkSSR Power Engineering"]

[Excerpts] As a chief strategic control of the intensification of the economy and the better utilization of accumulated potential, the party advances the fundamental acceleration of scientific and technical progress to the foreground.

M. S. Gorbachev

A further increase of the power potential of the republic and the growth rate of the technical re-equipping of the sector on the basis of nuclear power is projected in the 12th Five-Year Plan. Power units will be started up at the Chernobyl, Crimean, Rovenskiy and South Ukraine AESs and the Odessa ATETs.

Considerable attention is devoted to the creation of flexible capacity by the construction of GAESs [pumped-storage electric power plants]. Also projected is the start-up of power capacity at the Dnestrovsk and Kanev GAESs and the South Ukraine Power Complex.

Much work is planned on reconstructing and modernizing existing heat supply plants both by way of replacing individual elements of equipment and by the installation of new flexible and heat and electric power units for those that have exceeded their lifetimes.

Work will be extended on removing physically and theoretically outmoded power equipment and the creation of a 750-kV [kilovolt] loop network with the inclusion of all nuclear power plants.

The further construction and reconstruction of distribution networks is envisaged.

Work is continuing on the creation of the technical base for utilizing non-traditional energy sources, the development and expansion of new resource-

conserving technology and the experimental testing and development of new measures for protecting the environment.

The power engineering of the republic should raise the level of power supply to the economy to a qualitatively new stage in the 12th Five-Year Plan.

Notwithstanding the fact that consumers are basically supplied with power and the plan indicators are being fulfilled, the situation in power engineering is strained.

The work of the joint power system is characterized by low frequency and voltage, loaded inter-system overcurrents, extreme saturation of automated accident-prevention equipment and unreliability in the operations of several AESs.

The coincidence of many negative factors creates a real danger of cascading emergencies with considerable disruptions of power supply.

Due to the great individual capacities of power units and the poor inter-system connections, sources of considerable dynamic disturbances arise. Considerable generating capacity or customers are disconnected to eliminate unforeseen situations.

A shortage of special regulating capacity both in generation and in power consumption leads to operations at impermissibly low or excessively high frequencies.

Limitations and disconnections of customers from power centers occur. A number of most complex problems promote the intensive aging of power equipment.

These characteristics provide a basis for posing the question of the immediate development of criteria for the optimal development of power systems which would take into account the losses from operations at both low and excessively high frequencies and evaluate and ensure, first and foremost, the reliability of power supply and the reliability of the system overall.

An analysis of negative phenomena in the development of power engineering makes it possible to determine the fundamental areas for the intensification of power production on the basis of scientific and technical progress.

The chief technical area for intensification could be formulated in this manner: it is necessary to resolve the issue of raising the reliability of all stages of power production in a radical manner, to find specific manifestations of scientific and technical progress for every system and enterprise and to achieve their incorporation.

These tasks can only be achieved by mobilizing the human factor that is operative in all spheres and at all stages of power production without exception.

The development of centralized heat supply on the basis of technical solutions that were adopted several decades ago leads to definite difficulties both in the operation of power enterprises and in supplying the consumer with power, and it brings to the fore questions of raising the reliability of the heat networks. The creation of branched heat-supply networks, an increase in the diameter of trunk pipelines and an increase in the parameters of the heat-transfer agent all require a new approach to the problems of heat supply.

Combining the output of heat and electrical power at heat and electric power plants leads to a decrease in their flexibility characteristics and a decline in reliability, even though it has definite economic advantages. At the same time, the creation of branched heat networks with a minimum number of heat sources sharply reduces the reliability of heat supply, and the foundation for low reliability is laid at the planning level.

In order to raise the reliability of operation of the heat networks, it is necessary to resolve questions of protection against corrosion and of electro-chemical protection with the aim of increasing the service life to 60-70 years and more.

In December of 1985, the first asynchronous synchronous 200-MW [megawatt] turbogenerator (the ASGT-200) in world practice was placed in experimental production operation at the Burshtyn GRES, one of the most important features of which is the consumption of reactive capacity from the power system.

The assimilation of the ASGT for the regulation of the reactive capacity in the power system along with static regulating condensers should become one of the most important tasks of the upcoming years.

The control of sources and consumers of reactive capacity with the aid of computers as part of an ASDU [Automatic Dispatcher Control System] should be developed along with programs for optimizing the operations of the electric-power networks according to reactive capacity and voltage.

The combustion of low-grade coal at electric-power plants in boiler units and auxiliary equipment not adapted for this, along with an increase in coal ash content and a reduction in calorific value, led to a decrease in practically all operational indicators for heat and electric power plants. The working capacity of power units was reduced and idle time for equipment repair increased, which led to a decline in electricity output to the network and had a negative effect on the reliability of power supply.

The combustion of hard coal of low quality in the coal-dust boilers of electric-power plants made necessary additional consumption of up to 5 million tons of fuel oil a year for brightening.

The best and only acceptable route in the upcoming decades is coal enrichment. This requires the development of coal-enrichment capacity. At the same time, the constantly growing demand for power-generation fuel will in the end force the resolution of the task of the technological-process refining of low-grade coal. In the 12th Five-Year Plan, it is necessary to make work more active on the verification and development of fundamentally new technologies for the

combustion and refining of solid fuels, and in particular plasma torches, in a fluidized bed and other methods. A new type of power boiler will have to be created that provides for the combustion of coal with a calorific value of 3,800 kilocalories per kilogram and the corresponding operating and flexibility characteristics of modern requirements.

Great attention should be devoted in the 12th Five-Year Plan to energy-conservation programs. Energy conservation can currently be regarded as a new source of energy which is, moreover, ecologically clean and low-cost. The economic pre-conditions for the incorporation of energy-conserving technology are needed.

And, finally, the modern development of power engineering is characterized to a great extent by an increase in the requirements for protecting nature, and in particular the requirements for raising the degree of cleaning of the exhaust gases of ash to 99-99.5 percent, the introduction of indicators for maximum allowable emissions into the atmosphere and the tightening of monitoring of water consumption.

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GENERAL

PLANT RENOVATION, POWER CONSUMPTION IN MOSCOW FOR NEW PLAN

Moscow ENERGETIKA in Russian No 2, Feb 86 pp 5-6

[Article by Mosenergo [Moscow Regional Power System Management Administration] Deputy Manager A. P. Aleksanov and Candidate of Economic Sciences S. Yu. Rumyantsev: "Ways of Intensifying Power Production: The Moscow Power System on the Threshold of the 12th Five-Year Plan"]

[Text] At the modern stage of development of socialist economics, power engineering is a sector that has great significance for the normal functioning and development of industry, transportation, agriculture and the communal-welfare sector under conditions of scientific and technical progress.

At the April (1985) CPSU Central Committee Plenum, the party posed the task of beginning the new 12th Five-Year Plan, which should have an energetic start, in an organized fashion from the beginning of the first year. In light of this task, the efforts of Moscow power-industry workers have been directed toward raising the reliability of consumer power supply by the timely introduction and assimilation of power-generating capacity and the improvement of the utilization of the installed equipment.

The power base of Moscow is being developed and improved along with the city. Thus, over the 11th Five-Year Plan, two major new electric-power plants--TETs-23 and TETs-26--were placed in operation, which ensured the further development of the potential of the southern rayons of the city; the existing TETs-8, -21 and -23 were expanded as well.

Projected in the future is the assimilation of large amounts of power construction, and an extensive program of reconstruction and technical re-equipping of the enterprises of Mosenergo is envisaged.

Over the 12th Five-Year Plan, the reconstruction of TETs-8 will be completed along with the construction of TETs-25 and -26, the first 250-MW [megawatt] power unit will enter active service at the new TETs, the construction of the Zagorsk GAES [pumped-storage electric power plant] will be completed for regulating the daily power load, and two 150,000-kW [kilowatt] GTU [gas-turbine installations] will be introduced at GRES-3 as well.

The available capacity of Mosenergo electric power plants will increase by 2,300 MW overall systemwide over the 12th Five-Year Plan, including by 403.3 MW through the execution of measures for improving the utilization of installed capacity.

The rapid growth of available capacity compared to installed is planned, which is connected first of all with eliminating the discrepancies and limitations between installed and available capacity, and secondly with the modernization of obsolete equipment.

The proportion of electrical capacity located at heat and electric power plants in the Moscow power system totaled 80 percent in 1980. By 1990, the level of heat-supply centralization should be increased to 92 percent (taking into account the development of rayon heating plants). The lack of construction space within the city boundaries and the need to solve important ecological problems that arise in connection with the construction and operation of TETs, however, make the task of their further development in Moscow more difficult.

The amount of construction work on electric power systems will be increased considerably in the 12th Five-Year Plan--an increase in the capacity and the reconstruction of existing 500- and 220-kV [kilovolt] substations is projected, the construction of new substations is envisaged and the development of inter-system Mosenergo connections is planned.

A number of measures are projected to improve the reliability of the electric power supply of Moscow. Principal among them are the following:

- the installation of 500- and 220-kV automatic transformers at a number of substations;
- the construction of 110-500-kV-voltage electric power substations, chiefly utilizing progressive SF<sub>6</sub>-gas electrical equipment;
- the development of a Moscow 500-kV loop as a fundamental base to provide the consumers in the capital with a steady supply of power.

Much attention is devoted to increasing the reliability of heat supply in the plans of the 12th Five-Year Plan: a large amount of construction and the reconstruction of existing trunk heat pipelines along with pumping stations is projected, and the reconstruction of rayon heating plants is planned, as is the removal from operation of uneconomical small boilers and work on ensuring the necessary level of redundancy for the heating systems. The implementation of planning and construction of a loop of reserve connections is projected in particular in order to increase the reliability of heating supply for the central part of Moscow. Great attention is being devoted to improving the quality of heat pipelines. A shop for enameling heat-supply pipes is currently being built. The incorporation of new pipeline designs with polyurethane-foam insulation in a polyethylene covering is projected for the distant future.

Work on the technical re-equipping of power enterprises occupies a large part of the plans of the 12th Five-Year Plan. The power equipment of older Moscow electric power plants in long-term operation has already exceeded its lifetime and requires urgent replacement. These electric power plants are located in the developed rayons of the city where there is no free construction space, and therefore the replacement of equipment is being carried out in old buildings of the main grounds. The TETs-12 will be reconstructed in this manner for the first time in Soviet power engineering. Much experience has already been accumulated in conducting technical re-equipping operations, and contacts have been established with power-equipment producer plants. The additional question of financing these operations, however, requires resolution, along with the more active cooperation of organizations in coordinating plans or otherwise connected with the resolution of questions of power facility reconstruction.

The technical re-equipping of Mosenergo enterprises will make it possible to save up to 300,000 tons of standard fuel annually and will considerably improve the final cost indicators of power-system activity. Thus, in particular, the strengthening of the individual capacity of turbine units and the transition of Moscow TETs to the combustion of heavy gas fuel will make it possible to free up more than 1,000 personnel and save approximately 5 million rubles a year in repairs.

Along with the technical re-equipping of the capital's power enterprises, the task of improving the structure of the fuel equation and decreasing harmful emissions from the Moscow TETs should be resolved.

Work is constantly being carried out at coal-burning electric power plants to increase the efficiency of the electrical filters so as to reduce, to a significant extent, the emission of ash in the exhaust gases for the protection of the air of Moscow. A reduction in sulfurous emissions from electric power plants that burn fuel oil can be achieved mainly by the maximum substitution of gas for fuel oil, as well as a reduction in the sulfur content in the fuel oil supplied. In order to switch over the TETs plants to the combustion of gas, however, underground storage capacity for an additional gas feed of 5-6 billion cubic meters to the Moscow intermediate center during the heating season should be more actively developed, and the incorporation of a process plan at the Moscow Petroleum Refinery for oil refining should be accelerated that makes it possible to produce fuel oil with a sulfur content of 1-1.3 percent.

All organizations with a vested interest in the resolution of these issues should take a constructive position.

The development of the power base of the city is being implemented taking into account the economical consumption of fuel and power resources.

On the threshold of the 27th CPSU Congress, Mosenergo has developed an integrated program for the conservation of fuel and power resources. It includes work on the technical re-equipping of enterprises, the incorporation of the most economical heat and power supply power units with T-250 turbines

at electric power plants, and an increase in the operational efficiency of existing equipment.

Measures aimed at improving the primary technical and economic indicators for power plant equipment operation will be executed more efficiently in the 12th Five-Year Plan by raising the quality of the operational and repair services. The incorporation of ASU TP [Plant Technical Management Automation Systems] will continue at Moscow electric power plants for the analysis of the economy of equipment operating modes, which make it possible to evaluate the work of the personnel of each shift by economy and fuel overconsumption.

Especial attention is devoted in the plans of the 12th Five-Year Plan to decreasing the consumption of electricity for personal needs and its loss in transmission. The execution of a number of the recommendations of planning, scientific research and set-up organizations for increasing the efficiency of heat and electro-mechanical equipment operation is projected for this.

The incorporation of an automated data system for electricity accounting at Mosenergo TESs has great significance for monitoring the consumption of electricity for personal needs.

Energy conservation is, however, a common cause. Based on analysis conducted by competent institutes, the area of electricity use has large reserves at its disposal for reducing the consumption of fuel and power resources.

The creation of energy-conserving technology, the modernization and replacement of obsolete equipment and the incorporation of highly productive equipment and robot technology should be at the foundation of the work on energy conservation.

It is possible to present many examples of initiative in the execution of energy-conserving policies in practice.

In 1984, energy-conserving technology was incorporated in the Moscow-Ryazan Division of the Moscow Railroad that unites all of the services that participate in providing railroad shipping. As a result, 50 million kWh [kilowatt-hours] of electricity were conserved in the division, and 250 million kWh in the railroad overall, over the five-year plan.

The incorporation of regulated frequency drive for fans and pumps is planned at the AZLK [Moscow Motor Vehicle Works imeni Lenin Komsomol] with an anticipated annual saving of 300,000-400,000 kWh. The incorporation of robotized lines using microprocessors will save 300,000-500,000 kWh of electricity a year.

A large set of measures is planned at the Zil [Moscow Motor Vehicle Works imeni Likhachev] Association with an anticipated electricity saving of 155.7 million kWh.

Analogous reserves exist at other Moscow industrial enterprises. The Mosenergo scientific and technical progress plan in the 12th Five-Year Plan includes the indicated major economic operations and encompasses the following

areas: raising the technical level of power production; improving the structure of electricity output and the utilization of thermal capacity; and, improving the technical and economic indicators. A large program of operations is envisaged for the improvement of production management based on the incorporation of plant technical automation.

It is necessary to note that the implementation of all of the enumerated measures in the 12th Five-Year Plan, both for expanding and reconstructing Mosenergo enterprises and ensuring the necessary level of reliability for consumer power supply, will be implemented under ever more complex conditions of fuel supply for power systems and changes in the structure of electric power production in the country overall.

The start-up of a number of nuclear power plants in the European part of the country has led to an increase in power flow through the Moscow power system to the eastern regions of the USSR. This makes the operation of the lines of the electrical-transmission system more difficult and makes increased demands on its reliability. At the same time, the compulsory flows from the Center to the Urals, the Volga region and the South are sent in the face of fuel flows and are associated with substantial VL [overhead line] losses. This entails the utilization of Mosenergo TETs in a variable mode, that is, to an increase in the number of starts and stops of units and a worsening of technical and economic indicators.

The regulation of capacity in the power system is currently carried out by variations in the load on individual units within technically permissible limits, or by stopping them for 5-7 hours with a subsequent rapid start-up. The participation of power units in capacity regulation leads to uncompensated variations in the temperature condition of the machinery and individual assemblies and to mechanical damage and increased wear.

The start-up of the Zagorsk GAES, which will participate in covering the peak load schedule, serve as an instantaneous reserve for the power system, and have a positive effect on the ideal flow of current in the system as well as on the maintenance of system frequency, should eliminate the enumerated negative consequences of the shortage of flexible electric power plant capacity in the European part of the country.

In this regard, strict demands are being made of the GAES with regard to reliability and versatility in operation, flexibility, rapid plant start-up, and automated monitoring and regulation.

This leads, under conditions of insufficient GAES operating experience, to the necessity of implementing much experimental and set-up work for assimilating plant capacity in all modes, which will have an undoubted effect on the conditions of its industrial operation in this period.

The construction and start-up of the Zagorsk GAES, as well as the extensive program of reconstruction and modernization of Mosenergo power equipment, in the 12th Five-Year Plan will make possible the rapid growth of installed capacity in Mosenergo compared to the growth of electricity output. This

situation will have a negative effect on the final cost indicators of power system activity.

Much work will have to be done in the 12th Five-Year Plan on improving Mosenergo management organizations: a power production association will be created on the basis of the Moscow power system. It would be expedient in this to extend some of the rights of an all-union industrial association to the Mosenergo PEO [planning and economic department].

A large program is projected for improving the organization of planning and incentives. The currently existing management mechanism in power engineering does not have the means of influencing the most important indicator in sector operations under modern conditions--improving the utilization of existing electric power plant capacity. Consequently, the program of reconstruction and power equipment introduction must be coordinated with the indicators of planning and incentives.

Great tasks are before Mosenergo in the 12th Five-Year Plan for ensuring the efficient functioning of the system, a reliable supply to consumers and the execution of power-conserving policies. Painstaking work will be needed from all links for the successful realization of these tasks in practice.

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GENERAL

PRAVDA EXPEDITION TO STUDY WESTERN SIBERIAN FUEL BASE DEVELOPMENT

Moscow PRAVDA in Russian 24, 28 Jan, 1, 2, 9, 14 Feb 86

[Article by special PRAVDA correspondents V. Kuzmishchev, V. Lisin, G. Ovcharenko]

[24 Jan 86 p 1, 2]

[Text] The party advanced crucial tasks for acceleration of the country's socioeconomic development for the 12th Five-Year Plan and the future. To solve them, the country should have available the necessary oil and gas resources. And this depends primarily on the oil and gas workers of Tyumen Oblast.

How are matters now going among the producers of hydrocarbon raw material on the threshold of the 27th Party Congress? To obtain an answer to this question, the editorial board of PRAVDA sent a group of journalists to Tyumen Oblast.

Today we print the first installment of the participants of this unique PRAVDA expedition to Western Siberia.

One cannot but be amazed by the bravery of the people who have inhabited this severe kray over the years, who have constructed plants, cities and villages and roads and who have developed the oil and gas fields. The USSR now receives more than half the extracted oil and natural gas from Western Siberia. True, much has changed in Tyumen Oblast since the time of oil gushers. There are new technology, new cities and thousands of new drilling rigs. But why have the Tyumen oil workers in recent years been sidetracked and why have they become indebted to the government for millions of tons of valuable raw material? This cannot be accepted. General Secretary of the CPSU Central Committee M. S. Gorbachev clearly expressed this at a meeting of the most active party and economic workers at Tyumen.

Of course, the times of gushers are past, it is becoming ever more difficult to extract oil and new equipment is required. And allied workers, who either did not produce the equipment on time or, if the equipment is delivered, usually with large deficiencies, are undermining the oil workers here. Thus, a considerable part of the debt--approximately 20 million tons--is the result that the enterprises of Minkhimmash [USSR Ministry of Chemical and Petroleum Machine Building] have not completely delivered gas-lift units, on which the Tyumen workers counted very much. Only 1 of 11 planned units was introduced last year mainly for this reason.

Mechanized production is being introduced extremely slowly. The oil yield factor is decreasing. Gas-lift methods of oil production have achieved industrial decimation in the United States. Most of them in the USSR are at the stage of experimental work. Automation and telemechanics are being poorly introduced at the fields. Thus, only about half of oil wells have been connected to a telemechanics system. Automated record-keeping of oil production has been organized in only every third brigade.

"Yet another reason," relates the secretary of the party obkom V. Kitayev, "is slow development of new fields. The lag of production over the five-year period was established mainly for the Noyabr, Kogalym, Langepas, Raduga and Nyagan oil-producing regions, where the plans for development of new fields have not been fulfilled."

Yes, there are great difficulties and if one adds the severe climate to them, then they increase to even greater dimensions. But we recall that sober voices were heard even during the times of oil gushers and universal triumphs, who warned that the "easy oil" will be depleted within several years and that one must in time be prepared to produce "hard oil." All the prescriptions for this disease were written many years ago. And Minnefteprom [Ministry of the Petroleum Industry] and local managers need not sound the alarm now, while many years ago their basic document was the triumphant passport.

It is not so much a matter that the allied workers are now faced with the task of delay and that they are not working diligently as is the attitude to the problem itself. Those oil- and gas-producing administrations that began to renovate the fields in time, introduced equipment to produce the "hard oil," became pariahs, while those who took the easy path became heroes. Perhaps there is no need at this late date to reproach those for hindsight who determined the technical policy of oil production. But those words which now sound as a late reproach at that time seemed to them a premature alarm.

Let us now consider why the development of new fields is outside the purview of the oblast managers. The following lines are contained in the annual report of the oblast party conference: "However, one gains the impression that some managers of oil-producing enterprises consider the most rapid development of fields only as the duty of contract builders: to link the fields by an oil pipeline, pumping station, electric power transmission line and road. Drilling is developing slowly at most new fields and oil production tasks are not being fulfilled."

Here is that reproach. And we thought, regardless of how gladdened we were by the numerous changes, the methods of administration and customs of 20 years ago, which can be expressed by the phrase: "Oil at any price," pass through them sharply and clearly. But do the oblast managers really not know that each drilled meter must be supported with approximately 1 ton of freight in a new field: drilling rigs, chemical reagents, temporary shelters, cement and pipes. And if there is no permanent road, if it is difficult and expensive to import all this, then the main method is the same as 20 years ago--to winter over. It is a small thing that equipment becomes mired in the potholes of a winter road, but since there is no permanent route, production equipment dies because of this--it cannot be delivered to the destination until the onset of cold weather.



The fact that roads, energy and pipelines should stall production has long been confirmed by the everyday experience of the leading fields. These truisms have sounded from different tribunals and from the pages of the press, but they still have not become the rule of the day. Moreover, as we sit, there is the customary: "Let's go, let's go!" but it is important not only to produce oil and gas in Western Siberia. It is important to produce them with a sufficiently high degree of economic effectiveness. And as we can see, they do not like to think about this very much at Tyumen. Thus, 18 new fields were supposed to be put into operation this year. It is planned to establish roads to 15 of them only by the end of the year. And this means that the oil workers must drill on new sites more than 1 million meters of wells and must produce more than 2 million tons of raw material under conditions of a complete lack of roads.

As always, the airports of Tyumen and of the oil cities are overloaded with people. There are many here "on watch," that is, the oil workers and builders from different cities and republics: from the Ukraine and from Belorussia, from Bashkiriya and Azerbaijan. The weather in the Tyumen Arctic is capricious. That is why "those on watch" frequently have to spend the night at the airports. Incidentally, a few more conveniences at the fields than in these confined halls are available.

And the person who feels no concern about himself works accordingly. The chief of the subdepartment of the interdepartmental commission attached to USSR Gosplan V. Pavlov, upon meeting us at Tyumen, told us that the productivity of the watch brigades is much lower than that of the oil field workers living in base towns and settlements.

"But what is one to do?" we had to hear often. "There is a shortage of skilled specialists."

This statement seems strange to an uninitiated person. Can it be that they have not managed to stabilize the working collectives within 20 or more years? And what about the numerous towns that have sprung up in the tayga? But, like 10 or 15 years ago, they talk about an acute shortage of housing, lack of kindergartens, schools and cultural institutions in these new towns. People earn good wages here but it is not easy for them to transform their money into local services and goods. That is why the turnover of personnel is high.

The experience of practically all of the country's oil-producing regions is now represented in the Tyumen fields. Ambassadors of Baku and Groznyy, Kuybyshev and Krasnodar, Almet'yevsk and Ufa labor here. However, everything good that has been accumulated during the years of development of Soviet oil production has not yet become the property of the Siberian collective.

But are hundreds of thousands of people necessary for oil and gas production? We then calculated locally that few people are directly involved in oil and gas production. Many more are engaged in manual labor in the numerous commercial and service organizations and at the small bases of the large number of ministries and departments.

Bureaucracy is yet another age-old illness of the Western Siberian Territorial Industrial Complex. It would seem that this combination of words in itself requires a unified general client, common warehouses, large unified construction and repair bases and a unified transport system. Moreover, the departments, like independent princes, have their own fleet and berths and hundreds of small warehouses and bases. Each department has its own telephone exchanges.

The oil workers have been warming the atmosphere for a long time, burning casing-head gas, and the gas workers have not been concerned about condensate. Not one of these departments will now and again give a ruble for construction, let us say, for a municipal heating system or a bathhouse. But they continuously equip their own boiler plant and their own bathhouse. Here is a quote from the annual report to the 25th CPSU Congress: "We rightfully gave high marks to what has been done in Western Siberia. But there are also enough deficiencies. Dispersion and weak concentration lead to unsubstantiated delays and losses and inhibit solution of important problems." Many years have passed since these words were spoken, but there has hardly been any change. It turned out that the most difficult task for the different departments is to find at last a common language and to combine forces. This is even more necessary since, besides the petroleum, petrochemical and gas sectors, neither the construction industry nor transport nor agriculture can be left out of mind.

Is someone now working on solution of the named problems as they should? Incidentally, the answer to this may not be so rapid and simple.

[28 Jan 86 pp 1, 2]

[Text] Like all people, oil workers are born, grow up and finally grow old. Samotlor--the black pearl of Western Siberia, discovered by geologists 2 decades ago--is no exception and has become known to the entire world. The USSR will receive approximately one-fourth less oil from here at the end of the current five-year plan than let us say this year. But it will then be early to write Samotlor off the account.

The volumes of production will remain higher here as before than in many other regions.

The oil production foremen at the Belozerneft Administration Leonid Khalilov is a responsible and conscientious person. He gathered under one roof several different types of small rail cars and the brigades through their efforts equipped a cloakroom, a drying room, storerooms, a lounge and dining hall. Everything was comfortable and beautiful. And how can it be otherwise, Leonid feels, this affects the mood of people and means it affects the return of their labor. And one can also see that he is a reserved person. You feel that he is boiling inside, but outside he is calm and only looks tense.

"Why did we not cope with the task for January?" he asked and answered without any pause. "Because the unreasonable plan from above was 'imposed,' just 1 week before the New Year. Naturally there was no time to prepare as there should have been. Measures for the plan were compiled but what is the sense? They sent us a brigade from Belorussia to repair the wells. And the brigade has neither normal equipment nor working tools nor reliable equipment. How can people adjust here?"

It must be admitted, the conversation with L. Khalilov disheartened us somewhat. And the chief engineer of Belozerneft G. Orlov also threw oil on the flames:

"These 'hare' races with the plan are bothersome. One thing today, another thing tomorrow. And there are measures. On each occasion: the monthly plan was interrupted--write a letter, you did not cope with the 10-day task--write another letter. And we write and write. But little comes from this writing."

This is even more serious. One can permit some deviation in planning at the brigade level: what is not there is overlooked. But if it causes dissatisfaction among the management of the administration--the main structural unit at the field, then this cannot be explained by some measure of chance. This means that organization of management of production has breakdowns.

But how is the annual plan unrealistic for the Samotlor workers?

"There is nothing similar," firmly says the general director of the Association Nizhnevartovskneftegaz L. Filimonov. "It is intensive this is true. But it can be fulfilled. The main reserves are reduction of the stock of nonoperating wells and the most rapid introduction of new productive pools into operation."

Thus, the management of the association is confident and it will see a way of how to achieve that which has been planned. But the fact that this position is not always shared at the lower levels of the administration cannot be disregarded. Why is this?

It is very important to analyze this. After all, success is accompanied mainly by the fact of not only who poses the tasks and indicates methods of solving them, but also who organizes the work of the collectives so as to fulfill the planned tasks. And this most important component is viewed weakly.

We feel that the main thing is hidden in the fact that they have lost their perspective at the association. Everyone is involved only for today and for the concerns of the minute. It is difficult to reproach general director L. Filimonov for incompetence. He has many years of experience in the petroleum industry. And he knows as well as others that one must think about tomorrow. But he does not think or rather they do not let him think about it. And the resistant style of management of subordinate subdivisions--nervous, fast to take reprisals and pettiness, which has become established at Glavtyumenneftegaz [Tyumen Main Administration of Oil and Gas] and in the Ministry of the Petroleum Industry itself, is primarily guilty of this.

The facts are more than sufficient. Last year there were 291 committees for the administration and ministry alone at the association. If one subtracts Sundays, it turns out that the Nizhnevartovsk workers do not have a single day without taking care of inspectors. Of course, such increased attention to Samotlor is quite understandable. It must be put on its feet as quickly as possible. It is said that you can't get along without consultation with the "physicians" here. But is the efficiency of a committee always sufficiently high? But the following example prompted us to ask this question: crucial worker of Minnefteprom V. Gnatchenko was recently at Nizhnevartovsk for approximately 2 weeks. He meticulously, quietly and conscientiously analyzed

the situation, specifically, at Megionneft [not further identified]. People are always responsive to a kind word of a knowledgeable person. Qualified advice and specific assistance to an old comrade were quickly rendered. And the fact that this administration increased production in January is apparently through the effort of V. Gnatchenko.

But far from everything turns out this way. A list of measures is most frequently required. And having received it, they leave satisfied. Unfortunately, we were not always able to establish with even approximate accuracy the effectiveness of these committees. And no one even knows this. It is obvious since the work of these committees is evaluated by the effectively compiled report rather than by the specific production results of those subdivisions which they visited.

Several hundred different repair brigades are required at the association for the current year's plan. All this is according to measures. But the need was determined purely mechanically: the number of nonoperating wells is divided by the average number of repairs made by the brigade and here you have what you want. Foreman L. Khalilov also counted on the fact that the Belorussian workers will restore wells to him within calculated days, but a month is not sufficient for them. Did they really not know at the association that this mechanical accounting is unacceptable?

Of course, something is being done to improve the administration and service conditions. Thus, the production operators approached the wells at Samotlor. True, they are not trying everywhere to create a normal life for them at the field. But this is being done timidly. As before, the oil workers come with outstretched hand to allied workers: please do something. But they still hesitate: is it advantageous or disadvantageous to them. And it turns out that everything around the plan is overfulfilled, but the oil producers are laggards.

The entire battle heated up recently at the association: the petroleum administration needed so-called offshore wells, but it is unprofitable for the drilling administration--meters of drilling is lost since the working conditions there are complicated.

What are these facts talking about? The fact that no method has yet been found of making the really main goal the ton of produced oil for everyone rather than a meter of sinking or the number of repairs or amount of freight hauled.

One of the main misfortunes of the Nizhnevartovsk workers is the large stock of nonoperating wells. It not only is not decreasing but is even increasing. The reason is again organizational omission. The thrust is made toward brigades "imported" from outside. While they--they come and go--are hardly concerned about the quality of repair: they do not work here. Moreover, the skills of the new arrivals are lower, they do not know local conditions, they do not know how to equip everything needed as they should and they also are unable to create normal service conditions.

It is time to stop pumping people from other regions to the Nizhnevartovsk workers. After all, their own repair brigades are idle more than they work. Even more so since the Tatar and Bashkir producers assisting at the Tyumen

fields could reduce the number of idle wells very much. But not everyone will study with them.

The Nevteyugansk workers have also accumulated good experience--they have reached the highest indicator in the sector on the mean cycles between repair of wells. It is considerably lower among the Nizhnevartovsk workers. At prompting from above, the association sent a group of specialists to their neighbors to become familiar with advanced methods of labor. They return and sit on their hands: there is nothing new among them.

The constant assurances "to fulfill and overfulfill" are sometimes bothersome. Substitution of managers begins when everyone along the chain is involved in matters on the stair, and somewhat lower than was determined by the duty instructions. This does not result in anything except disorganization and lack of responsibility.

And what if replacement of the managers begins. They now complain at the association: it is difficult to find a chief of the petroleum administration--no specialists are coming. But how did they cope before this? Who reduced one of the main figures at the well to the position of a "little boy for beating?" They are changed with kaleidoscopic speed. And you can hardly explain everything by some errors in personnel selection.

We would not have devoted so much attention to the human factor at Samotlor, if this can be expressed, without reason. The development of initiative and expansion of the rights and responsibility of labor collectives and of their managers will primarily help the field to recover more rapidly.

True, matters are complicated at Samotlor now. The oil-bearing beds are severely depleted, the communication lines laid at the beginning and the installed equipment are failing and the social-service infrastructure has lagged far behind. But Samotlor still has a long life. This optimistic forecast is indicated by the fact that, for example, on New Year's Eve a new oil pool was discovered in the northern part of the field in the Senchimsk area. Specialists state that there are still many of these hidden satellites. And the plus is that the oil production of the beds, which will undoubtedly be more actively involved in the future than now, will increase.

But the main thing that we took away from our trip to Samotlor is the desire of people to work with total effort, their patriotism and consciousness of high responsibility to the country. And the people must be assisted to manifest themselves more fully.

[1 Feb 86 pp 1, 2]

[Text] Initially, Strezhevoy resembled all young oil towns of Western Siberia. The thick mud and timbers on the streets are ugly structures in which temporary dwellers have taken shelter. As soon as the navigation season opened, there were no fewer departees on the pier perhaps than those who rushed here, of course, after good money without a thought to becoming firmly entrenched.

But this similarity was purely external and only during the early days. Because a great deal of work was conducted from the very beginning to strengthen personnel and he looked into the future here from the first days of development.

A city has immediately begun to be constructed according to the general plan here in northern Tomsk Oblast and the client was a common one--the oil workers. There were neither numerous ATS [automatic telephone exchange] and boiler plants and neither quarrels as to who was to construct the movie theater, which ended in that no one constructed it. A curious detail. We have been talking with those who managed to finish school here, to obtain a higher education and who returned (and how otherwise!) to a place that has become their home town. And almost everyone understood that even in those times when there were no more than one or two houses in Strezhevoy and they all went out on their days off to help construct hothouses. Where was there time to think during the first, most difficult time of development of how to feed the future city? It is necessary to talk about hospitals, schools (both music and artistic) and sports bases?

The psychology of temporary workers can only be overcome by concern about people. And this cannot be done immediately. When the first collective garden was organized, people had to ask: take a section and show an example! Some took a section and those were convinced deep inside that nothing would grow in the sand and swamp. And now there is nothing from those who desired failure. They learned how to grow vegetables, fruits and even southern peppers.

In a word, the work carried out long ago has now yielded good results and has brought a planned return. The city is beautiful, young and there are no greater patriots in a radius of a thousand kilometers than the residents of Strezhevoy whose average age has not reached 30. The last timbers will be removed this spring.

Concern about people became the main theme in construction of watch settlements. Many residents of Strezhevoy fly 200 or more kilometers to work--to the watch settlement of Pionerskiy. And they live there for a week and sometimes 2 weeks. To construct a new city at the Vasyugansk fields means to triple expenditures under conditions of no roads. They decided to limit themselves to a watch settlement, but the service conditions there are such that another town would envy them.

A roomy dormitory with shower, sewer, several dining halls with a rather diverse menu, a sports hall, movie hall and bathhouses. Whereas procedures were prescribed by the physician in the base town, here the oil worker can continue them in a well-equipped dispensary. There is both a barbershop and a rental store, where one can rent, for example, a television set, and tailor and shoe repair shops. Instructors come to those who are studying.

One does not have to repair his vehicle in Pionerskiy by the light of a gas torch. Heated shops have been constructed for this and the last torch will soon be extinguished, since an oil preparation plant will soon be started up. But this is essentially a small plant with operator's console where a man in a tie sits.

Incidentally, the watch-expedition method has its own proponents. In the opinion of economists, it is feasible when it is used in a single region. Best of all in principle is the base town--watch settlement. But people still come from remote towns to here, especially to the fields of Tyumen Oblast. When Strezhevoy grows, as provided in the plan, to 80,000 residents, it will supply the watch settlements with personnel. Still many, very many people fly to Western Siberia for the watch from the Ukraine, Northern Caucasus and other remote locations. Despite the fact that they have no Arctic service, they must be paid good wages. And sometimes not for labor alone.

Let us say, a worker who makes rubber inserts in a warm room and who bonds automobile combustion chambers receives more than the director of another enterprise in his native Groznyy. Why is this?

Generally, while watches have been flying to Western Siberia for many years, no one has yet found time to analyze and bring order to this work and to draw conclusions from its lessons and how they studied in construction of Strezhevoy.

The watch settlements are not permanent, but so many forces and funds were required by the founders of Pionerskiy to import materials here for comfortable houses. The expenses and the main thing the deadlines for development of new fields could probably have been reduced considerably if, let us say, prefabricated dwellings for the watch settlements had appeared about 10 years ago (there were conversations about this even earlier). Incidentally, they have few conveniences. This question was advanced from a standstill only recently. Who calculated how many millions were sunk into the swamps due to this lack of foresight?

There are many other temporary problems with the "watch." For example, how to distribute the funds for feeding many thousand people who fly thousands of kilometers to work? Are they fed here or at their place of residence? How can one legally dispatch doctors, Aeroflot workers, service spheres and militia to watch settlements to work? And all these people are needed in Pionerskiy, where almost 4,000 persons labor.

And they are attempting to solve another, old problem for these locations at Strezhevoy. There is concern about people, but how does one increase the return of the oil pools. If the return can be increased by 6-7 percent everywhere, as scientists predict, then its all the same that a new field is discovered. There were no large gushers here at the Vasyugansk fields as at Samotlor and the problem of maximum extraction of oil was drawn carefully long ago.

We have already written about the shortage of gas-lift equipment. But there are also other methods. Tomsk scientists are conducting interesting experiments at Strezhevoy. We asked N. Khavronich, the chief of the Strezhevoy Administration to increase the yield of oil beds and for major overhaul of wells, to talk about this.

The essence is, relates Nikolay Nikolayevich, that scientists have proposed flushing the beds with a solution of special "composite." Laboratory experiments

were convincing, but how it will turn out in practice is difficult to say. Assume that the experiment even yields the most brilliant result, but can we immediately begin to use this method widely? No. Any question has to be solved on an integrated basis. And we do not know how to produce these solutions in large quantities. Everything must be resolved in good time.

Yet another question--one bed is not similar to another. This means that extensive investigations and development of versions are required.

"And still you had expenses," we interjected.

"Better late than never, but a small group of scientists should not have to solve this problem, but larger forces should solve it on wider scales. It is gratifying that the problem has become a real one, but is it not too late? How much oil has been lost."

And we again returned to our main thought that only timely, extensive and tedious work, which may not yield discernible results immediately, leads to success and to a high return.

The fact that the young town is shouldering the concerns of solving global problems is indicative also. There is a plant here that is not quite ordinary for oil towns, where different parts of drilling equipment and machines using lasers and powder metallurgy are renovated and strengthened. On the one hand, they are solving the problem well. But would it not be better to organize more effective quality control at the plants?

Incidentally, the fact that a fourth modification must be developed that yields strength and that the quality of rolled metal and pipes must be improved has been discussed for many years at Minchermet SSSR [USSR Ministry of Ferrous Metallurgy] and on the pages of the press, including PRAVDA as well. And this unresolved problem is making itself known among the Tyumen oil workers.

We recalled here, at Strezhevoy, how the chief of Glavtyumengelogiya [possibly Tyumen Main Administration of Geology and Protection of the Interior] F. Salmanov told us that the number of pipes for the geologists could be reduced considerably if their quality were increased. And now it often happens that the pipes are unsuitable after drilling two wells. And about what quality can one talk if the specifications at the metallurgical plants do not provide even simple ultrasonic flaw detection. The geologists have been forced to expend efforts and time on a careful check of each pipe. Accidents are not only losses but a hazard as well.

Thus, Strezhevoy has learned the lessons of older oil regions, but many of their problems are common with Tyumen, as we will see. It was reported to the first secretary of the party gorkom F. Garipov on the day of our departure that Strezhevoy has been awarded the challenge Red Banner of the CPSU Central Committee, the USSR Council of Ministers, the AUCCTU and the Komsomol Central Committee for the results of the 11th Five-Year Plan. The message is of course a pleasant one, but there is hardly time to be glad. There is a reduction in fulfillment of the plan, although a small reduction, but it is there. Incidentally, the mood is optimistic here. And each one with whom we had occasion to talk answers: "Let's make up for lost time!"



[2 Feb 86 pp 1, 2]

[Text] The artist who prepared the diagram of our route failed to note the town of Raduzhnyy on it. He obviously revised the map and did not notice this light and optimistic name on it. Incidentally, you would not find either Langepas, Nyagan or Kogalym. These towns are about 2 months old. But already tens of thousands of oil workers, builders, geologists, cultural and service workers and other specialties live here. How do they live? The answer to this question here in the Arctic is to determine to a greater degree than anywhere else how people work.

We arrived at Raduzhnyy late in the evening and it appeared no worse than other young towns of the country. There are wide streets, lighted windows of 5- and 10-story apartment buildings, a good school, as the driver told us, with a pool, an almost constructed communication building, palace of culture Stroitel, in the service rooms of which the party gorkom is temporarily housed, and a kindergarten.

In the morning, also in the dark, we went out to the oil fields. You have not completed viewing the sights until you learn that just last year, the recently organized Varyeganneftegaz Association had a shortfall of several million tons of oil. Were there the inevitable difficulties of establishment and growth? It was not just this. There are of course many reasons. We noted one of the reasons in the article "Keys from oil" (PRAVDA, 24 Jan 86). This is an age-old tactic of exploiting oil fields--chasing up to the minute records. The new wells were drilled without proper development, oil was pumped from them, while the forcing wells that pump water into the interior to maintain the pressure in the beds have not even been drilled. This was done hurriedly and the projects for exploiting the fields arrived when the planned level of production in them had been exceeded long ago and by many tons.

It was envisioned that as soon as a well stopped gushing to convert it to the gas-lift method of production, but until now not a single similar rig has been installed at a single field. Why is this? There is a chronic shortage of people and equipment. The wells have failed, they have been abandoned, new ones have been drilled, but these new ones are being exploited in the same merciless manner. There has been an increase of production of millions of tons every year of the five-year plan, Glavtyumenneftegaz sent triumphant messages to Moscow and the troubles accumulated. We are not talking about a natural reduction of the oil yield of the beds but about something much worse--about a forced reduction. And how is it here locally, where they cannot foresee the consequences of this, let us say directly, poacher's exploitation of the fields?

We turned to the main administration, ministry and other departments. They showed that a single oil-producing administration is unable to process enormous volumes efficiently and economically advantageously, that a serious base is necessary for development of the fields, that equipment and wells must be repaired, that an association must be created here and that part of the volumes must be turned over to subdivisions from other oil regions for operation, where there are labor and material resources.

And what is the answer? One after the other, as soon as the managers began to ask questions that disrupt the gusher euphoria, they are removed. Five chiefs of administrations were removed. Only one thing was required: "more oil at any cost."

But nature and poaching are incompatible. Oil production initially began to drop slowly and then more rapidly, like a stone from a mountain. The bed pressure was reduced by 70-80 percent at some fields. Practically every year there are accidents and fire at the field. The stock of existing wells crept sharply downward.

But this is not only the past, but the present as well. The Varyeganneftegaz Association, created at the beginning of last year, was placed under the same conditions as the 1986 plan and you cannot make it different with previous methods. Because neither people, equipment nor the base consolidated the task. For example, we saw how and where the oil workers' repair machinery: with a sledge hammer and with similar tools near the hot flare of casing-head gas which ignites the tayga.

"Of course, we received an abandoned economy," admits the chief engineer of the association F. Marichev. "Practically half of all the wells is idle. Most of them need major overhaul."

It must be noted that the managers of Varyeganneftegaz have not panicked and have not ascribed the current status of the field to the errors of their predecessors; they understand that technical reequipping cannot be done immediately by waving a magic wand. They are now arranging themselves for persistent, tedious search for their own reserves for improving matters and introducing the experience of the leading collectives of Surgut and Nefteyugansk oil workers. So that there is a program and a rather effective one. But who will execute it?

"At present we are provided with people only for production and drilling by only 70 percent," states F. Marichev. "The turnover factor of workers at the association has reached 69 percent during 7 months and skilled personnel are primarily required to introduce everything that has been planned and to stabilize oil production."

"And the problem of everyday life comes to the forefront. And we visibly encountered it at one of the clusters of wells. Experienced operators Sergey Shepelev and Boris Feofanov had to be released. The chief of the fifth oil field Kazbek Agnayevev even did not attempt to talk them into remaining--this was earlier, and he requested only that they wait until replacements for them are found."

"Did the work not suit them?" we asked.

"The position of outcasts did not suit them," one after the other answered Sergey. "We have been suffering here for more than a year."

It turned out that the operators were working without registration, even without a temporary registration. And this means they had no right to remain

on the list to receive housing, places for their children in the kindergarten or day nursery, they were unable to use medical and other types of services, they were not counted, providing the registered populace with goods and products, they could not buy a ticket for the aircraft if they want to go on leave. And if they do go on leave, they cannot return to work without a pass. And there is nowhere to get a pass. Every 10th man, woman and child at Raduzhnyy is in the same state as Shepelev and Feofanov.

Conditions are little better for the remaining residents. The chairman of the gorispolkom V. Grachev presented the following data: housing is provided for 53.9 percent at Raduzhnyy, hospitals and polyclinics are provided for 20.6 percent, kindergartens are provided for 27.2 percent and stores are provided for 24.7 percent. There are no movie theaters, sports complexes, hospitals, laundry or apothecary here. It is no small problem to take a bath, get a haircut or to check out a book from the library. Newspapers are delivered here 4-5 days old, although they arrive on the day of publication at Nizhnevartovsk, to which is a 3-hour trip.

And what finally happens here? The same thing: the lack of foresight of the people who are responsible for developing the region. Varyeganskoye and the other fields here initially decided to develop with watches from Nizhnevartovsk, developing housing and bases there. The decision was the correct one. But Glavtyumenneftegaz dumped the Varyeganneft administration into the bare tayga on purpose in the winter of 1980 without having prepared neither a housing fund nor bases.

But regardless of how it turned out, one had to think immediately about a town, to construct it on an integrated basis with all conveniences. Moreover, at this time, builders from different cities and republics of the country began to help Western Siberia, erecting modern multistory apartment buildings in the tayga. For example, Perm builders came to Raduzhnyy with their five- and nine-story buildings. But neither data for preliminary design work nor a general construction plan were ready at that time. Raduzhnyy, which is territorially subordinate to Nizhnevartovsk, was a pariah to its managers. Hence the present misfortunes. And how cheerful of the prospects of Raduzhnyy?

"We requested 500 million rubles during the 12th Five-Year Plan for development of the social infrastructure of the town," says the deputy director of Varyeganneftegaz A. Palyanov. "But they offer us 90 million rubles. The builders will begin construction of social-cultural-service facilities with 60 million rubles this year. We were unable to 'gain' more than 45 million. This means that many residents of Raduzhnyy will also have to wait longer for housing without registration."

But the complexity of the construction site depends not only on financing. The builders are unwillingly taking on the contract for social-cultural-service facilities. They are constructing them from brick here and there is an acute shortage of brick. Working with brick is laborious. You simply cannot design standard dormitories, kindergartens, preschool institutions and houses of culture from precast concrete, relying on the absence of a special base of the construction industry. Therefore, these facilities do not exist at Raduzhnyy.

The first secretary of the party gorkom A. Rybalov talked about the extended correspondence with USSR Gosstroy and with the Institute Novosibirskgrazhdanproyekt [not further identified]. The former requests review of the general plan at the construction site and requests that more convenient and comfortable series of buildings be found. The second requests that the apartment buildings to be installed by the Perm workers be redesigned and thus reduce the laboriousness of erecting them, that 70 percent of apartments in them be one-room rather than three- and four-room, as in the current plan. Built-in spaces where stores, pharmacies and everyday services can be located must be on the first floors in these buildings. But neither USSR Gosstroy nor the institute are rushing to accomodate the oil workers.

We spent another day touring Raduzhnyy. One of us decided to have lunch, another went to see a movie and the third went to get a haircut. None of this happened. The townspeople then attacked us with questions: when will they be able to live like humans?

I recalled the words of F. Marichev--the chief engineer of the association: it is a charmed circle: we cannot attract people with wages since we are not fulfilling the program. But we cannot fulfill the program since there are no specialists. Thousands of women who could work at the field and who have this experience do not work, since there is nowhere to leave their children.

Yes, the problems of the oil field and towns have become acute. How does one break out of this circle?

There is one opinion at the association, at the CPSU gorkom and in the ispolkom: we must begin with creation of normal conditions for people to live and work. As they are doing at Strezhevoy, Tomsk Oblast, about we we talked yesterday on the pages of PRAVDA. As they say, experience is worth repeating and multiplying.

[9 Feb 86 pp 1, 3]

[Text] Externally, there have been no changes whatever over many years either in drilling equipment or in the methods of oil production and the drilling rigs and pumping jacks were in the Baku fields at the beginning of this century. This reproach to science, which has not brought about a revolution in oil production, must obviously be addressed. But "black gold" is produced in this manner throughout the world. It is another matter that the drilling and oil-field equipment are being modernized. How are things going here?

"Of course, technical progress does not change our sector," the general director of the Surgutneftegaz Association V. Bogdanov answered my question. "And we feel this cosntantly. It is a different conversation as to whether we are satisfied with its rates or whether they meet the requirements of today. The answer is the same--no."

"An all-union conference was held at Surgut last fall, at which producers and machine-builders met. It must be said immediately: those who are responsible for technical progress on the fields of Western Siberia looked pale."

The oil workers had prepared well for this meeting. They even organized an exhibition of technology and different equipment with complete characteristics of their strong and weak points, suitability for operating under local conditions and the quality of manufacture. According to the evaluation of the Tyumen workers, more than half of the basic types of equipment does not meet their requirements. Here is just one example. Thousands of kilometers of electric cable unsuitable for operation have accumulated in the subdivisions of the main administration. At the same time, approximately 500 wells are standing idle due to a shortage of cable.

More than 3 months have passed after the meeting of the oil workers and machine builders. What has changed?

"The impetus of the machine builders is felt and was well given," said the chief engineer of the Surgutneftegaz Association V. Deshura. "We of course understand that one cannot expect immediate results, but there are changes. Thus, a large group of Ural machine-builders looked at their own drilling equipment. And the Surgut workers, among which were the well-known foremen of high-speed drilling V. Volovodov, traveled to their plant. Representatives of the Kharkov Electromechanical Plant will now adjust the production management stations directly at the fields."

The automotive builders responded to the needs of the Tyumen in a business-like manner without excessive vacillation. Nine plants of Minavtoprom [Ministry of the Automotive Industry] have already opened equipment service stations in the region.

But, unfortunately, many machine-building enterprises still prefer to operate by the old method. The flow of machines and equipment is increasing. The number of rejects accordingly continues to increase. Let us say, expenses to correct various types of plant malfunctions at Surgutneftegaz increased 2.5-fold during the last five-year plan.

Oilfield equipment travels from Azerbaijan to all parts of the country. A considerable part of it is sent to Western Siberia. But that which is faced by the Tyumen workers is sometimes designated more for Vtorchermet [secondary metallurgy] than for oil and gas production.

The deputy general director of the Surgutneftegaz Association V. Oganessov recently visited Baku. Scandalous facts were directly determined. It is little that the machine-building enterprises operating there are turning over no more than 70 percent of their products after the first presentation and they still find ways of dispatching products known to be unsuitable to the oil workers. Unfortunately, superior organizations close their eyes to this.

The Baku workers turned to the Surgut workers with a unique "initiative": let us correct our rejects together, for which we will send our own people to Siberia. And is it not more advantageous to produce high-quality products immediately? And cannot one see the ordinary feat behind this "initiative": to eliminate the flow of complaints by any manner?

The high-performance electric centering and hydraulic reciprocating pumps have given a good account of themselves in the Tyumen fields. But they produce very little of some and are only planning to produce others. They advise the Surgut workers to equip the wells with pumping jacks. And this was yesterday! After all, they require additional repair basis, people and equipment. But the main thing again is the same extensive path of development.

The fields are being replenished more and more with energy-saturated equipment. This means that a reliable electric power supply is one of the compulsory conditions of technical progress in the sector. However, this does not yet exist in Western Siberia. Minenergo [USSR Ministry of Power and Electrification], as is known, has not yet gotten away from the preference for "large," prestige facilities. To erect substations among swamps and to install electric power transmission lines across the tayga reaches are so dull. But, for example, a group of Lyantor fields, from which the national economy receives millions of tons of valuable raw material annually, is literally holding on to a "live" thread. Last fall a hurricane broke this thread. But it was still warm at that time and somehow the oilfield workers corrected matters. But what happens if this occurs in winter?

Of course, much depends on the oil workers themselves and on how effectively they use their available equipment and their scientific potential. And they have something to work on here.

A total of the country's institutes, five of which are sector institutes, are assisting the Tyumen workers to produce oil more rapidly and better. How effective is this assistance? The Tyumen main administration paid out approximately 40 million rubles for scientific developments through different channels last year. After long debates and calculations, the saving was determined at a sum that hardly exceeds half that paid out.

One asks whether the oil workers themselves are primarily guilty: could they have used the power of the ruble more effectively. What is interfering with this? Not all scientific and planning subdivisions still utilize cost accounting in full measure. Moreover, they are dispersed and are subordinate to local economic managers, who sometimes do not have the time and also the skills to manage science in a qualified manner, or even more so to establish effective cost-accounting relations. Hence, there are disassociation and pettiness, parallelism, the absence of specialization and coordination in research and planning.

It is no secret that some economic managers view their own scientific subdivisions like "lawyers' offices," immediately given them such delicate commissions as "scientific" substantiation of "lack of reality of plans." This instead of making them real, while scientific advances are immediately embedded in designs and are fully used in practice. Coordination and cooperation on a country-wide scale are extremely necessary. The All-Union Association SoyuzproyektNIIneft was recently created for this purpose at Moscow. It was a correct decision. However, the activity of the association is being delayed by local ambitions and frequently by the devotion of the ministry to the old schemes of management of science. Reality also requires that specialization and cooperation of sector institutes, a considerable part of which now operates in Western Siberia, be further developed.

But what is depressing is that even that of value, which has already been thought up and tested by scientists, sometimes does not find a way to the fields. Thus, the collective of the Western Siberian Branch of the All-Union Scientific Research Institute of Petroleum Machine-Building has issued approximately 120 patents and has received inventor's certificates for them during the past 10 years. However, few of the technical innovations have been used in practice. Most of them are gathering dust on the shelves. And only a few of the 16 developments of the branch, recommended by the interdepartmental commissions for serial manufacture, have made their way to the plant shops.

In saying goodbye, the general director of Surgutneftegaz V. Bogdanov said:

"The decision has been made to create a scientific research and planning institute of petroleum here. I very much hope so."

One would wish that these hopes are substantiated. But this is possible only on the condition that science will not play a secondary, subordinate role, but will daringly move forward, and together with the producers seek and utilize the reserves of the fields on cost-accounting bases.

[14 Feb 86, pp 1, 2]

[Text] We traveled to Nefteyugansk. We wanted to look at the experience of those who are working rhythmically and confidently during this difficult time for Tyumen oil producers. The collective of the Yuganskneftegaz Association emerged this year as the initiator of a competition in the sector to achieve above-plan indicators and they are keeping their word from the first days.

And we wanted an answer to yet another question at Nefteyugansk: why did the Nizhnevartovsk workers not find, as we write in the article "Alarms and Hopes of Samotlor," nothing interesting in the experience of their neighbors? Perhaps they searched for it poorly? Or did they simply not understand?

In fact, the Yugansk workers frequently do not understand, usually, when they express their special opinion on some question or other. For example, you will rarely find enterprise managers who would today not link improvement of matters with future new equipment: this it seems is a panacea. But the general director of the Yuganskneftegaz Association V. Nikolayev feels differently.

"One must be realistic," states the director. "Scientific and technical progress will not arrive at all the wells tomorrow or day after tomorrow or even immediately. Acceleration of it is not a feat of a magician but long and intensive work."

This means that the current organization of labor must primarily be improved, available equipment must be utilized to the maximum extent and total production of each well must be achieved. Acceleration will begin with this.

They have behaved in this manner from the first days of creation of the association. Although many managers were replaced for different reasons, each new manager continues the main line of his predecessors. It is clearly followed in the affairs of the collective.

The oil workers have the following expression: "weeding the field"--as long as possible, stable level of oil yield of the bed. To maintain "weeding" for years, by preventing natural aging of the field, one must exploit it intelligently: do not force production, conduct work at advancing rates to maintain bed pressure. Not everyone has this patience. Especially when the well is gushing and the oil itself is torn from the earth. They begin to chase after records and after today's advantage without thinking about the consequences.

The oil- and gas-producing Mamontovneft Administration developed its "plot" by this principle, when it was made an association. They chased only tons of oil, forgetting about the normal development of wells. But the new management, having noticed that the pressure in the pools is beginning to drop, artificially reduced production. And the oil workers obediently began to gather stones from their garden, which had come from different departments: the Yugansk workers were not fulfilling the plan.

And when they "cured" the beds after 2.5 years and after the "weeding" was stabilized, many of those who achieved this were no longer at the association. But time stands still. And the challenge Red Banner of the CPSU Central Committee, the USSR Council of Ministers, the AUCCTU and the Komsomol Central Committee, with which the NGDU Mamontovneft [Oil- and Gas-Producing Administration Mamontovneft] was awarded, is primarily recognition of the services of those managers of the association who fought for a thrifty, State approach to the matter. They passed on this style to their pupils, including V. Nikolayev, who began work here as an operator.

The forman of the underground well repair brigade Gennadiy Starodubtsev is also not a newcomer to the fields. "Earlier there were paradoxes," recalls Starodubtsev. "We worked according to the piecework-bonus system. The main thing was not the quality of repairs by the number of them. It turned out that it was advantageous to us when a well is idle rather than is operating."

Specialists of the association converted the underground repair workers to the nonwarrant system of payment. It would seem that there is a distortion in the other direction: the workers are awarded bonuses for the fact that they sit idle. But this "idleness" forced Starodubtsev and his comrades to monitor the operation of the wells more carefully and to carry out primarily preventive maintenance rather than emergency repair. And the stock of nonoperating wells at the association began to drop sharply.

However, when the Yugansk workers presented their brigades for prize positions in the sector competition, their results were not even considered at Minnefetprom: we have other indicators.

But they did not think of retreating at Nefteyugansk. They increased the mean cycles between repairs of wells each year, accordingly increased the production of oil and proved the prospects of their method. The highest indicators in the sector on the length of operation of a well are now here.

"The Yugansk workers can permit themselves much," their neighbors now say. "They have a base--one of the best in the region."



There is no need to argue with this. We saw with our own eyes how well-thought out and with skill the capacities of the specialized administration to increase the oil yield of beds and on major overhaul of wells were equipped and outfitted. This subdivision and its base were created 8 years ago. And they were created through their own initiative, by a thrifty method, rather than by dispensation from above and rather than by contract organizations.

Equipment and machine tools have also not been obtained from stocks: they were taken at enterprises that were renewing their production. But others did not lift a finger for this: the plans for exploitation of the fields contained no repair facilities and other services--so it was not necessary! This is even better: without being distracted, we will take the oil until it falls into our hands. They are now biting their nails: the fields were not developed and the wells stand idle more than they operate.

The Nefteyugansk workers, relying on a powerful base, mechanize and automate their wells and introduce telemechanical monitoring systems. A total of eight scientific research institutes works effectively with the oil workers. One of them--the Krasnodar VNIKRneft [not further identified]--first unsuccessfully tried to introduce a new method of repair of unsealed wells. But 5 years ago, the Nefteyugansk workers heard about this and proposed cooperation with the scientists. Matters proceeded. The Dorn unit was developed from institute developments at the base, it was modified to an industrial model and now patches up the pipes with metal plasters without removing them from the well. Just one of these repairs yields 30,000 rubles savings.

Incidentally, everything did not initially proceed smoothly here. Because 1 year ago Glavtyumenneftegaz unexpectedly ordered reformulation of the specialized administration for major overhaul and ordered the specialists and bases to be converted to oil-producing administrations. This occurred in most associations. They expressed their own special opinion only at Nefteyugansk. And they turned out to be right: the order that did not substantiate itself has now been canceled.

"We are trying not to make willful decisions," says the secretary of the Yuganskneftegaz partkom Yu. Byk. "We first consult with the collective and then reach our conclusions. Thus, for example, we also had the brigade contract."

The advantages of this method are generally known. But it has not yet yielded the expected return for the oil workers. Therefore, it must be introduced at many associations, as they say, on a voluntary-forced basis. The Nefteyugansk workers have also elected their own path here. Questionnaires were decimated: how should it be? A meeting was then convened. They talked at it without cribsheets, listened to everyone and made decisions unanimously. And it was this: convert the production shops entirely to contract rather than individual brigades--they are too small for this. A maneuver for allied workers then appears, the utilization factor of technology and equipment appears and the main thing--the single indicator for everyone becomes the produced ton of oil.

The transfer of leading experience is also interpreted differently in the collective. Not only are placards published and not only are meetings held, but the leaders travel to lagging brigades. And they bring them up to their

own level of skill. An example are such communists as member of the Tyumen CPSU obkom V. Shadrin. We wanted to talk with Valentin Konstantinovich but were not able to: he had flown off with a party of 23 workers of the association, who had decided to help restore the stock of wells at Varyeganneftegaz. A total of 52 percent of the wells there is not operating.

And in the evening we were invited to a meeting of representatives of all the organizations of Yuganskneftegaz and there we heard about those problems which have not yet been resolved at the association. The impression at first was such that we were not in the leading collective of the sector but in the one lagging most behind. But the general director of the association listened to the criticism of himself, to speak frankly, not with satisfaction. Why is this? He sees in it still unutilized reserves.

As a result, they decided to produce 35 rather than 20,000 tons of oil above the plan before the 27th CPSU Congress and to bring the account up to 300,000 tons instead of 85,000 tons before the end of the year. The oil workers clearly see reserves for fulfilling the increased pledges.

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GENERAL

KAZAKH POWER MINISTER ON EKIBASTUZ, OTHER ENERGY TASKS

Alma-Ata NARODNOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 2, Feb 86 pp 40-43

[Interview with Kazakh SSR Power and Electrification Minister Viktor Tikhonovich Kazachkov by NARODNOYE KHOZYAYSTVO KAZAKHSTANA: "Between the Lines of Pre-Congress Documents: Republic Power Engineering on the Move"]

[Text] "...Continuing the formation of the Pavlodar-Ekibastuz Territorial Complex... Putting the capacity of Ekibastuz GRES-2 into operation, developing the construction of Ekibastuz GRES-3 and the South Kazakhstan GRES. Completing the building of the Shulbinsk GES..."

(From the draft of the Fundamental Areas of Economic and Social Development of the USSR for the Years 1986-90 and for the Period to the Year 2000).

"Communism is Soviet power plus the electrification of the whole country." This lofty Leninist phrase, uttered at the dawn of Soviet power, has lost none of its topicality and significance in our time. As before, power engineering remains a key sector of the economy that has an immediate and growing influence on the growth of the productive forces of the country, the acceleration of scientific and technical progress and the intensification of production.

Kazakh SSR Minister of Power and Electrification V. T. Kazachkov answers the questions of our correspondent on the contributions of the republic to the country's energy equation and prospects for the 12th Five-Year Plan in light of the Fundamental Areas.

[Question] Viktor Tikhonovich! How did the republic's power engineering complete the 11th Five-Year Plan?

[Answer] The results of sector operations over the past five years can be termed as positive overall. Kazakhstan now occupies third place among the republics in the production of electricity. Over 1985, 37.8 percent more was output at Kazakh SSR Minenergo [Ministry of Power and Electrification]

enterprises than in 1980. The plan for thermal power output for consumers was overfulfilled by 6.7 million gigacalories (the growth rate compared to the base year was 133.4 percent).

Twelve turbine units with a total capacity of more than 3.3 million kilowatts [kW] were placed in operation. The Ekibastuz GRES-1 with eight 500,000-kW power units entered the operational ranks along with the first phases of the Alma-Ata and Tselinograd TETs-2 and the second stage of the Pavlodar TETs-1. Thanks to this, the rated capacity of ministry power plants grew by 22 percent.

The construction of the power grid continued, which made possible the development of the Kazakhstan Unified Power System [YeES]. Of the 64,000 kilometers [km] of new electrical-transmission lines, 1,300 km are part of the the 500 kilovolt [kV] system, including Agadyr--Dzhezkazgan, South Kazakhstan GRES--Alma-Ata and Irikla--Orsk--Aktyubinsk.

One hundred and forty two kilometers of heating-supply network trunk pipelines were built and 164 local heating boilers were shut down.

The consumer transition to centralized heating supply required, along with the expansion of the existing electric-power plants, the reconstruction and modernization of turbine units with their transfer to a heat-and-power supply mode of operation.

In order to improve social welfare conditions, the republic power-industry workers built 540,000 square meters of housing, 2,950 places in pre-school institutions, 3,140 places in schools, 750-visit capacity polyclinic space, hospitals with 505 beds and dispensaries with 250 places.

[Question] What principal tasks remain before the workers of the industry in the 12th Five-Year Plan?

[Answer] To put it succinctly, the program before us is unprecedentedly crucial and intensive.

The creation and further development of the major power-intensive industries of ferrous and non-ferrous metallurgy in Central and East Kazakhstan, mineral fertilizers in the southern regions of the republic, the oil and gas industries in the western ones, the construction of new long-distance trunk water lines and the railroads' transition to electric traction will require a greater rate of growth in power capacity and an increase in the reliability of consumer power supply. Thus, electrical output at ministry electric-power plants should increase by 30 percent over the five years, the output of thermal energy by 11 percent and the productivity of labor at our enterprises by 25.7 percent. This is while the cost of the production of goods is planned to decrease by 6 percent.

In order to achieve the projections, we must activate more than 6 million kW of new turbine capacity.

Seven new power units will enter operation at the Ekibastuz GRES-2 along with 2 new power units at the Mangyshlak GRES and, at the end of the five-year plan, a power unit at the South Kazakhstan GRES.

In order to improve the heating supply to cities and industrial enterprises, the following will be implemented: the construction of a new Semipalatinsk TETs, the second stages of the Alma-Ata and Tselinograd TETs-2 and the Karaganda TETs-3, the expansion of the Ust-Kamenogorsk and Guryev TETs, the installation of steam and generating boilers for heating purposes at a number of electric-power plants, and the laying of 178 km of heating supply trunk pipelines.

The fuller and more integrated utilization of the hydroelectric resources of the Irtysh River basin is projected in the interests of the economy of East and Central Kazakhstan, for which is planned the introduction of 6 hydroelectric generators at the Shulbinsk GES and the beginning of construction on the Semipalatinsk GES.

More than 16,000 km of 35-kV and greater LEP [long-distance transmission lines] will be constructed as part of the Unified Power System of Kazakhstan.

A great deal of work will have to be conducted on assimilating the progressive automation, including resource-conserving equipment and technology, of production processes, the incorporation of new and the modernization of existing equipment, the protection of the environment and the construction of facilities that protect nature.

The power-industry workers of the republic themselves will receive more than 800,000 square meters of housing, pre-school institutions for 5,480, hospitals with 1,325 beds, polyclinics with 2,400-visit capacity, schools with 5,000 places and 3 pioneer camps with 1,200 places.

[Question] What are the significance and prospects of the further development of the Ekibastuz Fuel and Power Complex [ETEK]?

[Answer] The ETEK, which is the basis of the Pavlodar-Ekibastuz TPK [Territorial Production Complex] now being formed, is created on the basis of the unique Ekibastuz coal, the explored reserves of which have been evaluated at many tens of billions of tons.

Taking into account the needs of the economy and the shallow bedding of the Ekibastuz field, which permits the large-scale production of fuel by the most economical open-mining method in order to keep transportation expenses to a minimum, a resolution was adopted for the construction of four major electric-power plants in a complex immediately adjacent to the colossal coal reserves, and another one--the South Kazakhstan GRES--at Lake Balkhash.

Their total capacity will be 20 million kW. That is enough to satisfy the electricity requirements not only of our republic, but of many oblasts of the Russian Federation.

It was projected to construct ultrahigh-voltage transmission lines from Ekibastuz for this. The first sections of a 1,150-kV direct-current LEP for the transmission of power to the Urals is already in operation. Next are an analogous high-voltage Kazakhstan--Central Asia line and a 1,500-kV alternating-current LEP for transmission to the center of the European part of the country.

The new power bridges will make it possible to increase the flow of electricity from Kazakhstan and the other eastern regions, and it will be transformed into one of the most important centers of the Unified Power System of the USSR, joining the power systems of Siberia, Central Asia and the European part of the country.

The creation of unique LEPs of this length and heating plants of a total capacity heretofore unprecedented in world practice, concentrated moreover in a limited territory, and their utilization of Ekibastuz coal has transformed the ETEK into a distinctive experimental test range, where fundamentally new technical solutions and domestic power-supply equipment is being developed and tested along with methods of controlling the process parameters of major power complexes under various conditions, including under difficult conditions and in emergency situations.

The entry into service of the Ekibastuz GRES-1 has already made it possible to balance the electricity demands of Central and West Kazakhstan, as well as to send some electricity to Omsk Oblast. The incorporation of the Ekibastuz GRES-2 and the South Kazakhstan GRES will ensure a steady electricity supply for the extensive regions of the center of the country and the Urals and Siberia on the one hand, and Kirghiziya and the southern part of Kazakhstan--including their capitals, Frunze and Alma-Ata--on the other.

The heating-supply plants will play a leading role in the development of the electrical supply of the republic in the future as well.

[Question] Does this signify that the utilization of hydroelectric resources for the production of electricity in our republic will now be assigned secondary importance?

[Answer] No. Where its potential is sufficiently great, which should be confirmed on a technical and economic basis, hydroelectric power will be dynamically developed. Testimony to that is the Shulbinsk GES now under construction, the design capacity of which is twice as large as that of the Bukhtarminsk, which has been in operation for many years.

The capacity of the future Semipalatinsk GES is comparatively small--330,000 kW in all. In the same way as the previous electric-power plant of the Irtysh series, however, it is intended not only for the production of cheap electricity, moreover in the ecologically cleanest manner, and for the covering of peak electrical load in the joint power systems of North Kazakhstan and Omsk Oblast, but also for the considerable expansion of the area of arable land in the flood-lands of the Irtysh and the improvement of conditions for animal husbandry.

This does not, however, exhaust the social and economic significance of major hydroelectric construction: in the future, it will become a base for the development of all of the surrounding regions. Already, for example, the well-equipped town of Shulbinsk, founded less than 10 years ago, numbers thousands of residents and is continuing to grow.

Also projected for the future is the construction of a GES series on the Charyn River. Questions for diverting part of the flow of the Katun River to Bukhtarma with the erection of an electric-power plant on the diversionary canal are being worked out.

[Question] We have already spoken of the construction of republic electrical-transmission trunk lines in Kazakhstan. What is being done on the formation of a joint power system for the republic itself and the creation of local power-supply connections?

[Answer] In fact, we already have no rayon electric-power stations operating in isolation. Over the last five-year plan, the basic inter-system network for 500-kV, and intra-system for 220-kV, was formed in Kazakhstan.

Six power systems for the North, East and Center of the republic (Kustanayenergo, Tselinenergo, Pavlodarenergo, Karagandaenergo, Ekibastuzenergo and Altayenergo) make up the Unified Power System of Kazakhstan, which is a link in the Unified Power System of the Soviet Union.

Two power systems--Almaataenergo and Yuzhkazenergo--operate in a loop with the Joint Power System of Central Asia.

The Aktyubinsk and Urals power centers are also connected in the same way with the Joint Power Systems of the Central Volga and the Urals.

The construction of Frunze--Alma-Ata, Chimkent--Dzhambul, Dzhambul--Frunze, South Kazakhstan GRES--Dzhambul, Kokchetav--Petrovsk and other 500-kV electrical-transmission lines is projected for the 12th Five-Year Plan.

The same type of LEP will run from the Balakovo AES to Uralsk. In the future it will be extended to the Karachagansk Gas-Condensate Field.

Work on the formation of a Kazakhstan Joint Power System, as a part of the Unified Power System of the USSR, is continuing.

[Question] How will all of this aid the resolution of the Provisions Program and the growth of rural electrification?

[Answer] The electric-power base that has been created in Kazakhstan makes possible the intensive development not only of the leading industrial sectors, but also those associated with processing agricultural output. This is the basis for its technical re-equipping and the social and economic transformation of towns.

The rural electrical system has today been extended by almost 350,000 km. All rayon centers and grain acceptance points of the republic, inter-farm and

other enterprises, and kolkhozes and sovkhoses have been connected up to the state power system. The level of centralization of agricultural power supply has reached 99.5 percent. Hundreds of thousands of electric motors and installations are in operation in the technological processes of crop growing and animal husbandry.

All homes of kolkhoz residents and the employees of sovkhoses and social and cultural welfare facilities in the towns are supplied with electricity.

Demand for electricity in rural areas has tripled over the last 10 years, but the power capacity of agriculture in the republic has only doubled.

[Question] What role is played by the sector in the electrification of the railroads of Kazakhstan?

[Answer] A most immediate one. Already, 17 percent of the railroad mainlines of the republic have been switched over to electric traction with the aid of the power-industry workers.

In the 11th Five-Year Plan alone, more than 400 km of 220-kV electrical-transmission lines were built and placed in operation for this purpose, which made it possible, specifically in 1985, to electrify the high-traffic Mointy--Sary-Shagan section of the Alma-Ata Railroad. At the beginning of the current five-year plan, another important section--the Sary-Shagan--Chu section--will be switched over to electric traction with the aid of the power-industry workers.

A 220-kV Arys--Mointy--Tash VL [overhead line] is projected for the electrification of the railroad's Chimkent--Arys section.

In all, more than 2,000 km of such lines will be required in the 12th Five-Year Plan for the further transition of the railroads of South, North and Central Kazakhstan to electric traction.

[Question] What are the areas of development for centralized heating supply in the republic?

[Answer] Currently such cities as Alma-Ata, Ust-Kamenogorsk, Dzhezkazgan, Balkhash, Pavlodar, Temirtau and many others have been transferred almost completely to the centralized supply of heat.

The combined production of heat and electricity, begun in the sixties on the basis of central heat and electric power plants and major regional boilers, is extremely efficient. Thus, the proportionate fuel consumption in the production of electricity in these cases is almost half as the most economical GRES.

The centralized production of heat and electricity at a TETs makes it possible to refrain from the operation of inefficient small boilers and ensures, especially with a transition to gas, the more rational utilization of fuel and labor resources and a sharp reduction in emissions that pollute the atmosphere.



Through the cogeneration of heat, it is projected that we will be able to close down 800 small boilers, free up approximately 2,400 people and save 1.75 million tons of standard fuel over the 12th Five-Year Plan alone, and in this way obtain an annual saving of approximately 19 million rubles compared to the separate version.

In spite of all of the obvious advantages, however, the introduction of heat and power supply capacity is still considerably behind the growth in demand, in which regard the improvement of city heat supply remains one of the most acute problems in the power engineering of the republic.

Among the multitude of reasons for the situation that has resulted should be cited first and foremost the inadequate and untimely allocation of funds for the indicated aims and the systematic lack of assimilation of them by construction organizations, especially USSR Minenergo and the KazSSR Mintyazhstroy [Ministry of Construction of Heavy Industry Enterprises] by virtue of the limitations of the material and construction base.

A reduction in calorific value, moreover, and a worsening of the quality of the fuel supplied and the great deterioration of the equipment led in turn to a reduction in operational steam capacity.

Thus, the resolution of the problem requires an integrated approach that unites the efforts of various ministries and departments.

[Question] And how is the state of affairs in ensuring the steadiness of power and heat supply, especially during the fall and winter?

[Answer] It must be stated that the experience of past years and the shortcomings we tolerated earlier have taught us much, and we now assign paramount significance to the resolution of these issues.

A large set of measures is implemented every year at ministry enterprises for preparing electric-power plants, power equipment, and electrical and heat-supply systems for operating in the extreme conditions of fall and winter.

It should be noted that during the intensive assimilation of the virgin lands of Kazakhstan, in providing a minimal capital investment in electrical-system construction, it was implemented in a radial scheme--according to the then-existing temporary standards for LEP technological planning that were wholly unsuitable for the requirements of a number of climatic regions of the republic for reliable electric-power supply in strong winds and in ice and frost conditions.

Many electrical-transmission lines have since been rebuilt or replaced by new ones. But the problem has still not been removed conclusively from the agenda.

The draft of the plan for the years 1986-90, therefore, projects the construction of 15,700 km of 10-, 35- and 110-kV LEPs for increasing the reliability of electric-power supply for agricultural consumers alone.

Complete system redundancy is envisaged in it for facilities in the first category with regard to reliability of electric-power supply.

[Question] In conclusion, Viktor Tikhonovich, tell us about the prospects for the utilization of non-traditional energy sources.

[Answer] It is economically expedient to utilize low-voltage solar-power installations in the southern oblasts of the republic for heat and hot-water supply, especially where there is a low electrical load density in the pasturable sheep-breeding regions, and wind-power apparatus to lift water to animal watering places, supply electricity for the shepherds' winter homes, and for the electric drive of pumping stations for oasis irrigation.

The planning studies in this area should be implemented in accordance with the orders of the Gosagroprom [State Committee for the Agricultural Industry] of the republic.

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GENERAL

COAL, POWER PLANT DEVELOPMENT AT EKIBASTUZ

Ekibastuz Development Perspectives

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 13 Feb 86 p 2

[Article prepared by KAZAKHSTANSKAYA PRAVDA correspondent V. Stupak:  
"Between Congresses"]

[Text] "Continue forming the Pavlodar-Ekibastuz Territorial-Production Complex. Significantly increase coal production in the Ekibastuz Basin, begin mining the Maykyuben Coal Field. Put new capacity into service at Ekibastuz GRES-2 and begin construction of Ekibastuz GRES-3. Begin construction of the Boshche-Kul Copper Mining-Enrichment Combine...

"Organize production of the Step wide-cut harvester."

These lines from the draft Basic Directions of USSR Economic and Social Development for 1986-1990 and the Period Until 2000 direct Pavlodar residents and the entire republic to materialize the most important statutes of the new edition of the Party Program. Both of these documents, approved by the October 1985 CPSU Central Committee Plenum, provide for a new, swift takeoff of the Soviet economy, and the Pavlodar region has an appreciable role in this.

For the third five-year plan in a row, the development tasks for the Pavlodar-Ekibastuz Territorial-Production Complex [TPK] are given a separate line in the Basic Directions and other concluding documents and decisions of our party's congresses. The principally new concept of the TPK was formulated for the first time at the 25th Congress.

It's no accident that for the last 15 years, the country's attention has been directed to the industrial center on the Irtysh River (many of its new facilities were noted back in the directives of the 20th and subsequent congresses). The Pavlodar-Ekibastuz TPK is one of the most dynamically developing in the country. In Kazakhstan, it has solidly taken a leading place along with Karaganda, and continues to develop its economy. The growth rate is faster than that of other oblasts in the republic, particularly Karaganda Oblast, with which it competes.

However, the party's course for accelerated socio-economic development can no longer meet either the pace or the output of the 11th Five-Year Plan;

this was especially noted at the just-completed 26th Congress of the Kazakhstan Communist Party.

And what is the return from this new entity? What must be done to intensify the development of the Pavlodar-Ekibastuz TPK? How can the socio-economic improvement of the region be accelerated? What solutions are suggested by the lessons learned in the years between congresses? These is the series of questions and problems which we will analyze for the readers of KAZAKHSTANSKAYA PRAVDA.

#### Overview of Coal Production

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 13 Feb 86 p 2

[Article prepared by KAZAKHSTANSKAYA PRAVDA correspondent V. Stupak:  
"Industrial Giant: Accomplishments, Lessons, Plans: Fuel"]

[Text] A new five-volume passport (architects call it a regional planning scheme) of Pavlodar Oblast, prepared in 1985 by the Leningrad State Republican Institute of City Planning, states, "A combination of various minerals, favorable geographical position, convenient transport links, water resources and a rich agricultural region provide favorable conditions for the integrated development of productive capacity."

Coal is today the foundation of the entire economy of the Pavlodar Irtysh region. There are two types of coal here: bituminous coal in the Ekibastuz Basin and brown coal in the Maykyuben Basin.

"All the false rumors about our fuel, because of its high ash content and in connection with the widespread construction of main gas pipelines and nuclear electric power plants, come from lack of knowledge of the true state of affairs," says S. P. Kurzhey, general director of Ekibastuzugol Association. The production costs of electricity generated at GRES's and TETs's burning Ekibastuz coal are competitive with the indicators of electric power plants operating on natural gas, and are one-fourth to one-fifth those of electric power plants using coal from other basins, not to mention nuclear fuel."

In last year's severe winter, when cruel cold turned dozens of carloads of Kuzbas coal into impossible-to-unload monoliths, the invariably dry Ekibastuz fuel helped out tens of electric power plants in Siberia and even in the Moscow area. Irtysh-area miners have earned the gratitude of the government for their uninterrupted loading and dispatch of coal trains.

During the entire 11th Five-Year Plan, the country's fourth stokehole produced about 32 percent more fuel than in the previous five-year plan. A particularly successful year was 1985, when there were widespread competitions in honor of the 50th anniversary of the Stakhanov Movement and for the honor of producing the billionth ton of Ekibastuz coal. In this final year, the miners produced 80.5 million tons of fuel. They not only exceeded their plan, but also their obligations by over 1 million tons.

The five-year plan for product sales also was successfully fulfilled. And, the main thing is that not one of the 22 electric power plants ever had a fuel-supply disruption.

These and other achievements, programmed by the decisions of the 26th party congress, will soon be the basis for a report addressed to a new forum of communists. There are many such achievements. The decorated collective, which produces over 11 percent of all domestic coal and over 1/4 of the coal mined by the progressive surface-mining method, is one of the country's leading collectives. Lenin's noteworthy phrase, "The main question of all is Ekibastuz and its significance for the Urals," has become a living thing, which has long ago exceeded the scale which the leader of the revolution envisaged.

What is the basis of the success of the people who work with nearly the thickest coal seams in the world, of the people who live and work in places where it is hot and extremely dusty in summer, and windy and cold down to minus 40 in the winter?

"Communists see the success as based above all on the strengthened influence of the party detachment of miners," says G. I. Morgunov, party secretary of Ekibastuzugol. "Particularly, all collectives are aiming toward re-equipment of production and toward the bold implementation of progressive forms of labor organization. For example, at the mine-transport and repair enterprises, new brigade forms have spread rapidly. While these forms included about 2000 workers in 1980, they included 8000 in 1985. The structure of brigade labor has changed significantly. For instance, integrated cost-accounting crews were formed at the Bogatyr Surface Mine on the initiative of party groups and brigade leaders communists S. Zubko, V. Sakharov and A. Shishlov. This initially involved over 300 brigades. Excavator operator communist A. Zelenkov was the first coal surface-mine worker to volunteer to work on the brigade contract method. Now, 2000 crews are following his example, and the initiator himself received a USSR State Prize for his great contribution to developing the basin."

"Today's miner can do little without equipment," says N. M. Belik, technical director of the association. "In the past five-year plan, we renewed half the excavators at the Bogatyr Mine, tripled the number of draglines in stripping pits and replaced nearly all the locomotives at the Severnyy Surface Mine. The number of heavy bulldozers doubled."

Based on the use of bucket-wheel excavators, considered the best surface-mining technology, Ekibastuz miners long ago surpassed all other enterprises in the sector. Nearly 94 percent of all Ekibastuz coal is mined in this manner. The latest word in coal production is the Vostochnyy Surface Mine, where the advantages of bucket-wheel mining are aided by conveyor transport of the fuel up to ground level. During the present five-year plan, the Vostochnyy Mine will reach an output of 30 million tons per year and will be a prototype of future mining enterprises.

It must be said that today, the coal miners of Ekibastuz are not as worried about the main mining and stripping equipment as they are about the support

equipment: the various auxiliary machines, which ensure the productive operation of the giant excavators. These auxiliary machines clear and lay track, fill machines with fuel and lubricants and perform repairs.

Coal miners consider the prestige of repair workers to be extremely low. Due to the poor supply of repair equipment and the lack of a modern repair base, repair workers are insufficiently productive and, therefore, are paid poorly. And, in principle, it should be the opposite of that. The repair worker should be at the top. Intensification dictates such a turnaround.

By the end of the five-year plan, the Ekibastuz workers must take from the coal faces 97 million tons of fuel. At the same time, 94 million cubic meters of overburden must be removed annually. These are gigantic volumes! They won't be achieved by outdated methods.

### Problems in Power Construction

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 13 Feb 86 p 2

[Article prepared by KAZAKHSTANSKAYA PRAVDA correspondent V. Stupak: "Power"]

[Text] Ekibastuz today produces 3.5 percent of all the country's energy resources including oil, gas, coal, AES's and GES's. Its energy makes each of us three times stronger than our own muscles would allow. By the end of the century, GRES-2 and GRES-3 will be built here and the Yuzhno-Kazakhstanskaya GRES will be built at Balkhash. At that time, this indicator will increase several-fold. Tasks for the present five-year plan are to build and put into operation seven 500-MW generating units at GRES-2, begin construction of GRES-3 and finish building the electric transmission lines. By the year 2000, the Ekibastuz Fuel-Energy Complex [ETEK] is to be basically completed.

While today the Pavlodar Irtysh region provides half of Kazakhstan's electricity, it will generate three-fourths by the end of the above-mentioned period. Today, this does not inspire pride among the power construction workers and power workers of Ekibastuz, as it once did, but instead serious concern, due to the great responsibility of the assigned tasks. The task is great, despite the fact that the role of ETEK has been narrowed. Previously, ETEK had been called upon to help the Urals and the country's central area with electricity; today, its capacity is barely enough to meet the republic's demands.

This occurred because the pace of ETEK construction called for in state documents was not achieved. This resulted from the unwillingness of USSR Minenergo [Ministry of Power and Electrification] to build a construction-industry base in Ekibastuz. Meanwhile, the heroic efforts of the fifteen-thousand-strong detachment of construction workers, installers and startup personnel made it possible to erect the 4000-MW GRES in a

period of time previously not achieved in Kazakhstan. During construction, the workers had to correct many design and economic miscalculations and oversights, endure inconveniences in public services and housing and solve dozens of new technical problems. For example, many sets of equipment manufactured by the Ministry of Power Machine Building, Ministry of the Electrical Equipment Industry and Ministry of Instrument Making, Automation Equipment and Control Systems were delivered with serious defects. This caused unstable operation during the early years.

"The lessons of Ekibastuz have taught many people, above all, us," says B. G. Nurzhanov, general director of the Ekibastuzenergo Association. "The main thing today is not to repeat mistakes."

There is the danger of that. For example, in the five-year plan just started, power construction workers need to fulfill twice as large an annual volume: nearly 150 million rubles more. However, Minenergo has not backed up its doubled task by either creating new construction subdivisions, as was planned not long ago, or by taking other practical steps. All of this from the very beginning of the first year of the five-year plan places the realization of the program in doubt.

One gets the impression that those in the sector's head office do not want to undertake efforts to principally increase the capacities in Ekibastuz: they say, the republic needs the energy, so let the republic worry about it.

This means that the republic will have to rely on its own forces. And they are not large. The demand for electricity is rising swiftly and, besides, Kazakhstan has nothing else to count on except Ekibastuz. Is it possible that priority projects again will have to be cut back, mainly at the expense of everyday conveniences and by eliminating housing and social-cultural construction?

Meanwhile, several facilities, such as the power repair plant, ETEK's educational-training complex, a number of construction industry projects and municipal-infrastructure projects have not yet been realized. These projects have for many years been "on hold" at the Ekibastuzenergostroy Trust, the main construction organization of the power industry. Who, besides this organization, will complete the construction and reconstruction of GRES-1? This is what concerns residents of Ekibastuz and the entire oblast.

#### Construction Industry Success, Problems

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 13 Feb 86 p 2

[Article prepared by KAZAKHSTANSKAYA PRAVDA correspondent V. Stupak: "Construction"]

[Text] If at some future date, someone erects a monument to the people of a profession to honor their services to this region, then Pavlodar residents will put up one for construction workers. Probably, the sculptor will want

to carve the likeness of the famous Pavlodar stonemason Nikolay Menshikov; or maybe that of Ekibastuz construction worker Vasilii Sizintsev; maybe that of Nikolay Serba, the installer of the majestic refinery towers, or the young universal construction worker Anatoliy Shayakhmetov. There are many true craftsmen in the Irtysh area! There is no one whom we curse or honor more than construction workers. This is probably because their labor transforms our homeland most visually and substantially.

Truly, construction in the Irtysh region has become the most powerful factor in the oblast's socio-economic development. Here are just a few figures and facts about the 11th Five-Year Plan. Ninety new units of productive capacity were started up. Among them are the country's first catalytic thermal cracking installation at an oil refinery and two unique ferroalloy furnaces, the products of which have captured a world market right up to the USA. New installations and shops have been started up to produce alumina from low-grade bauxites at the aluminum plant and to manufacture steel forgings at the tractor-building association. An experimental plant and a number of new types of production were started up.

At the same time, there has been a change for the better in the attitude of construction organizations toward residential-social projects. They are among few in the republic that have met their five-year plan for the introduction of housing, schools, kindergartens, polyclinics, professional-technical schools and clubs. In Ekibastuz, for example, along with large residential blocks (the city's population has doubled over the five-year plan), two Service Buildings, the Power-Workers Palace, a hotel, a movie theater and a self-serve department store have been erected.

Construction has been unusually steady in rural areas, which are called upon to provide this ever-growing region with milk, meat, butter, bread and groats. All rural construction workers have converted to the brigade-contract method. Their achievements were among the best in the country. Pavlodarselstroy-5 Trust has won the sector's nationwide Challenge Red Banner.

Pavlodarpromstroy Trust won the same honor last year. This leading detachment is known for its high level of construction industrialization, for its use of bold engineering solutions and for its mobile labor organizations.

But Pavlodarians wouldn't be Pavlodarians if they were satisfied with this. And at present, they are dissatisfied with themselves. Why? There has been no fundamental change in capital construction, and many managers are still working in the old manner. Even gorkoms and raykoms are extremely slow to restructure in the spirit of the new demands. As M. S. Gorbachev correctly noted at the October 1985 Plenum: "Not all of our personnel have yet broken loose from the inertia of old ways; they haven't converted from following to extensively leading the economy."

What is it that dissatisfies even such leading construction workers as Pavlodar workers?



"We often call our age 'the age of industrialization', while we keep our construction industry in the background," says L. D. Brodskiy, chief of Pavlodarpromstroy Trust. "A worker from the reinforced-concrete products plant receives half as much as an installation worker at the construction site. Is this really proper? The people who actually fulfill the plan are in the role of Cinderella. In addition, the base in Pavlodar, especially that belonging to the Ministry of the Construction Materials Industry, was long-ago fully depreciated. Equipment can't be used until it completely wears out, or it will get its revenge. This attitude must be changed."

The second thing is that the main advantage of our management system is planning. This is true. However, construction workers work under conditions where the plan is an extremely relative concept. Frequently, they don't know what they will be doing in the near future. The annual plan is still being settled as late as June. And, up till then, the construction workers operate at their own risk and responsibility, and do not know whether they will be paid for their work or not. This is especially characteristic of the oil-refining industry. And how the plans change sharply from year to year! One year, the plan is 10 million rubles--the next year, half as much, for some reason. Then suddenly the order again jumps to 15 million. How can the collectives work with such ups and downs? Disband? Give year-long leaves? Construction production must be even, as any other type of production. This is where the main reserves are hidden; this is the key to intensification.

Once, a brigade leader stated that he can raise labor productivity 1.5 to 2 times without any science or technological progress.

"How can you do that?"

"Very simple," said the experienced workman with a grin. "Give the brigade a continuous supply of materials and I will give you the labor productivity planned for the end of the next five-year plan."

The brigade leader is right. He sees the heart of the matter. Can the volume of construction-installation work in the Pavlodar-Ekibastuz TPK be doubled without developing and re-equipping that same construction industry which gives us construction materials? Hardly.

Now, in the oblast, an integrated program has been developed for raising labor productivity based on industrialization, mechanization and implementation of leading methods. It is not worth a nickel if the Pavlodar Lightweight-Aggregate Plant is shut down for 5 months out of 12 or if the ZhBI-4 reinforced-concrete products plant produces only half its design output, while overloading its machines as before. Are there many advantages in the measures written for Ekibastuzshakhtostroy, if the spans for its building-structures plant remain unfinished?

The construction workers of the TPK seriously intend to dedicate the present year to strengthening the construction industry. If would be good for the Ministry of Construction of Heavy Industry Enterprises, the Ministry of the Construction Materials Industry and other republican

departments to support their efforts. This is required by the doubled tasks which have been placed before this efficient detachment.

### Region Lacks Scientific Base

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 13 Feb 86 p 2

[Commentary of the P. I. Yerpilov, First Secretary, Pavlodar Obkom, Kazakhstan Communist Party]

[Text] Thinking about the future of the Pavlodar-Ekibastuz TPK, those in oblast party headquarters today clearly see that our industrial region, with its predominance of priority sectors, will be unable to maintain for long its leading role if we don't strengthen the contribution of science. Meanwhile, science is the most vulnerable point of the TPK. In this steppe region here, which famous Soviet poet and Pavlodar resident Pavel Vasilyev described as a place where "only the mills waved their wooden arms," there are no home-grown scientific-research institutes, no branches of such institutes, not even problem-oriented laboratories. In Ekibastuz itself, where the latest coal-mining methods are used and where these methods are tested and conceived jointly by scientists and Ekibastuz engineers, the only representative of science is a branch of the Ukrainian Scientific-Research and Project Institute of the Coal, Ore and Gas Industry, which has 20 staff members. By comparison, the Kansk-Achinsk Fuel-Energy Complex, which was organized later than ETEK, has an entire institute.

Power workers cannot boast about even this tiny oasis of science. In light of today's demands on scientific-technical progress, an abnormal situation has developed. The basis of Kazakhstan's energy potential, its very large transformer substations, with their unique design and mechanisms, and all the outgoing super-high-voltage power lines are concentrated in Ekibastuz. Meanwhile, all the republic's power science, in the form of an institute, is in Alma-Ata. It's not surprising that this 500-member collective has yet to have a noticeable influence on the TPK's power industry. Unfortunately, we still have not seen the necessary scientific support of production by the republic's Minenergo.

Today, one of the most understudied--and in some directions, unpredictable--subjects is the sphere of ETEK's ecological problems. This includes dust from ash dumps, the constant discharge into the atmosphere of an entire bouquet of chemical compounds and soil leaching in the surrounding steppe. The incidental visits of scientific workers, who are more worried about collecting data for their dissertations than about the state of the region's environment, are providing practically nothing. Constantly operating outposts of science are needed, which would be as dedicated to the interests and problems of the TPK as are those organizations which provide over half the republic's coal and energy, a third of the country's ferroalloys, a significant part of the aluminum oxide and caustic soda, every tenth tractor and many other very important products. If science were closer to the TPK, we could obtain not only energy from Ekibastuz coal, but also large volumes of aluminum, cement and many other materials.

The main task of the oblast's communists is to foresee the future and find the most efficient path to it. We see the greatest reserve in the integrated use of the industrial complex on the Irtysh. So far, unfortunately, the approach has been narrowly departmental. The ministries, following very ingrained habits, ignore the combination of interests of various sectors and the region. For example, our tractor plant ships tractors to the Dormash Road-Building Machinery Plant in Kalkaman. There, they are unloaded, fitted with bulldozer blades and again put on the flatcars to be shipped to customers. What do we have to handle the tractors twice, tie up flatcars, use cranes twice and the secure the tractors a second time? Isn't it possible to do the reverse: ship the bulldozer blades to Pavlodar, put them on the tractors and ship them immediately to the consumer? All that's needed is to organize a small assembly area adjacent to the tractor plant: a branch of Dormash. Apparently, that can't be done. They are in different departments: the Pavlodar plant is the Ministry of Tractor and Agricultural Machine Building, while the Kalkaman plant is in the Ministry of Construction, Road and Municipal Machine Building.

Or take our oil refinery. It is a leading enterprise, with the latest technology. But every year we are forced to shut it down completely for a month for repairs; during that short period, several million rubles worth of work must be done. Why did this become necessary? Only because the ministry pushed the interests of the enterprise and of the region to the back burner. The sector's management is not concerned that this repair work leaves many construction projects in the republic workerless. This all came about because the ministry decided, without thinking it through or justifying it, to stop construction of the second phase of the refinery, which, incidentally, was given a separate line in the Basic Directions of the 11th Five-Year Plan. Therefore, 15 million rubles worth of valuable equipment was frozen, and the reinforced-concrete shells representing two years of construction work are lying dormant. The latest catalytic thermal cracking installation operates at half capacity. What kind of intensification is this? Despite the clearly predictable losses, the problem has not yet been finally and firmly resolved.

Often, local party organs are not able to uphold the general state interests of the complex in the face of the narrow departmental approach. Experience shows that organizational efforts alone cannot provide a cardinal solution. The interdepartmental contradictions and the narrow departmental approach especially stand out. They result in a breakdown in the formation of the productive and social infrastructure in ETEK development. A complicating factor is the problem of protecting the environment and using production wastes, especially ash and overburden.

In this regard, it has long been necessary to create a management system built on program-target principles. Such a system could provide: 1) proportional, dynamic development of the sectors in the complex and 2) synchronized introduction of interrelated projects of basic production and of the production and social infrastructure.

This matter has so far not progressed beyond the stage of theoretical discussion and projects. Growth is dynamic, but not integrated. As a

result, the party obkom has to spend much time and effort settling interdepartmental contradictions and preventing miscalculations of the region's integrated development. Unfortunately, these tasks cannot always be resolved positively. There's no end to the work in this direction. It contains the new reserves of the young TPK. People must work for the republic and for the country. This is what is required by the decisions of the 26th Congress of the Kazakhstan Communist Party. The fresh wind of change and the basic restructuring which is taking place in our society give us the confidence to say: the problems will be resolved, and the complex's development will again accelerate.

12595

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GENERAL

TURBINE PRODUCTION AT LENINGRAD METALS PLANT DETAILED

Moscow EKONOMICHESKAYA GAZETA in Russian No 14, Apr 86 p 5

[Article by EKONOMICHESKAYA GAZETA correspondent A. Shevtsov, Leningrad: "With the 'LMZ' Trademark"]

[Text] To expand the output of highly efficient equipment for the rapid development of power engineering--this line from the Fundamental Areas, approved by the 27th Party Congress, relates directly to the collective of the Leningrad Metal Plant [LMZ] association. After all, all of our major hydroelectric, heat and nuclear power plants are equipped with LMZ-brand turbines.

High capacity, guaranteed reliability in operation, low proportionate metal consumption. The last indicator favorably distinguishes the Leningrad turbines from analogous ones produced by leading overseas firms. Thus, the proportionate metal consumption of the new 1,200-megawatt [MW] LMZ steam turbine is 1.58 kilograms [kg] per kilowatt [kW], while that of the machinery produced by the American Rovenswood firm is 2.52.

Ninety-nine percent of the association's output has been certified as being of the highest quality, and approximately one third of the equipment manufactured is supplied for export.

Success was not easy. As late as the beginning of the last five-year plan, the LMZ was among the laggards and there were complaints about the quality of its production. But the collective was able to mobilize.

First and foremost in the association, they decided to strengthen the process service by all means. With this intent, a process administration was created that had as a task the search for optimal variants for the manufacture of various power-machinery assemblies.

At the same time, the number of employees in the departments was reduced by more than 200. As a matter of fact, the LMZ collective is among five Leningrad enterprises that were the first to be included in an experiment to improve the wages of designers and process engineers. Over the course of the experiment, the number of inventions issued by the specialists increased by almost two and a half times, and the amount of scientific research and

experimental work executed with their own manpower also increased. The average wage was increased by a third, and the productivity of labor grew by even more.

Both the developers and those who immediately execute the production were convinced of how profitable it is to produce output of a high technical level. In 1985 alone, the wholesale price markups totaled more than eight million rubles. These funds went not only toward developing production, but also toward material incentives for the leading workers in competition and into the housing construction and social and cultural functions funds.

Especial attention will be devoted in the 12th Five-Year Plan to the creation of turbines for nuclear power plants. The Leningrad metal workers are now working on creating a third "millionaire" for the South Ukraine AES, and next is a turbine for the Crimean AES. These turbines will be distinguished from their predecessors by lower metal consumption and labor intensiveness in manufacture.

Crucial tasks are before the collective in the sphere of gas-turbine production as well. The series-production 100,000-kW turbine is already unsatisfactory for the consumers, even though it was regarded as one of the best in the world in its time. It was therefore decided to replace it with a 150,000-kW gas unit. It will not only be more powerful, but more compact as well.

The Leningrad power-machinery workers will also take active participation in the utilization of non-traditional energy sources. In the association they have already begun to work out in outline form the creation of horizontal machinery with a turbine-wheel diameter of 10 meters for the Kola tidal electric power plant. The collective has moreover been charged with the planning and manufacture of bearings for wind-power installations.

12821

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GENERAL

BRIEFS

POWER EQUIPMENT INDUSTRY MEASURES--In an article under the title "Both Build, and Renovate" published on 1 Aug 1985, Chief of the Power and Electrical Engineering Department of the USSR State Committee for Science and Technology V. Dobrokhotoy cited the slow technical re-equipping and renovation of existing equipment as one of the reasons for the deceleration of the rate of the electrification of the economy and of power-worker ratio growth in industry. As reported to the editorial staff by Deputy Minister for Power Machine Building S. Chasnyk, the draft of the new-equipment plan for the 12th Five-Year Plan stipulates the manufacture of a group of equipment in 1987 for the experimental-production steam-gas unit at the Novo-Tul'skaya TETs. A prototype of a gas-turbine power installation will be manufactured as well, along with the continued output of turbine pumps for the Zagorsk pumped-storage electric power plant. Also projected are measures for improving the quality of the power equipment produced. Special representatives of Gosstandart and USSR Minenergo [Ministry of Power and Electrification] have already begun, in particular, to implement continuous monitoring of the quality of production output at twelve sector enterprises. An integrated sector plan of measures for improving the technical level of production is projected to bring the quality of power equipment to the level of the best world models. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 30 Mar 86 p 2] 12821

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